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MOLLUSCAN WORLD

VOLUME I

COMPILED BY
CHARLES RUSSELL ORCUTT

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MOLLUSCAN WORLD

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2322 Chione undatella Sby.

724 Chione undatella Reeve.
2312 Chiton albolineatus Sby.
726 Chiton? brandti Middendorf.
258 Chiton (Mopalia) ciliata (See No. 1280)
252 Chiton (Maugerella) conspicua Cpr
339 Chiton (Ischnochiton) cooperi
256 Chiton (Callistochiton) decoratus Cpr
249 Chiton (Trachydermon) dentiens Gld
469 Chiton (Trachydermon) fallax Carpenter.
727 Chiton? fastigiatus Gray.
250 Chiton (Callochiton) fimbriatus Cpr.
251 Chiton (Chætopleura) hartwegii Cpr.
338 Chiton (Ischnochiton) magdalensis
253 Chiton (Stenoradsia) magdalenensis Hds
336 Chiton (Mopalia) muscosa
254 Chiton (Paliochiton) lanuginosa (Cpr) Dall, 1878
259 Chiton (Mopalia) lignosa acuta Cpr
248 Chiton (Leptochiton) nexus Cpr
255 Chiton (Lepidopleurus ?) pectinulatus Cpr
257 Chiton (Nuttallina) scabra Reeve
337 Chiton (Acantopleura) scabra
728 Chiton virgulatus Sowerby.
333 Chioaera leonina
729 Chlamydochiton amiculatus Pallas.
730 Chlamydochiton? vestitus Gray.
316 Chlamydoconcha orcutti Dall
223 Chlorostoma brunnea Phil
221 Chlorostoma funebrale A Ad
222 Chlorostoma gallina Fbs
1606 Chlorostoma gallina multifilera
731 Chlorostoma ligulatum Menke.
732 Chlorostoma montereyi Kiener.
224 Chlorostoma pfeifferi Phil
733 Chlorostoma pulligo Martyn.
62 Chorus belcheri
734 Chrysallida cincta Carpenter.
200 Chrysallida pumila Cpr
735 Chrysallida pumila Carpenter.
524 Chrysodomus (Sipho) acosmius Dall.
557 Chrysodomus amiantus Dall. Off S. Barbara Isl., in 414 fms.
736 Chrysodomus antiquus Linne.
558 C. Aphelus Dall. Off S. Barbara Isl., in 414 fms.
737 Chrysodomus behringi Middendorf.
738 Chrysodomus castaneus Morch.
739 Chrysodomus despectus Swainson.
3649 Chrysodomus dirus Reeve.
522 Chrysodomus eucosimus Dall.
3067 Chrysodomus eulimatus
740 Chrysodomus fornicatus Gmelin.
559 C. griseus Dall. Off S. Barbara Isl., in 414 fms.
525 C. (Sipho) halibrectus Dall.
1225 Chrysodomus harfordi Stearns.
741 Chrysodomus harpa Morch.
523 Chrysodomus (Sipho) hypolispus Dall.
536 Chrysodomus insularis Dall.
519 Chrysodomus ithius Dall.
742 Chrysodomus kelletti Hinds.
743 Chrysodomus kennicotti Dall.
744 Chrysodomus liratus Martyn.

537 Chrysodomus (Ancistrolepis) magnus Dal.l
520 Chrysodomus periscelidus Dall.
521 Chrysodomus phœniceus Dall.
745 Chrysodomus rectirostris Carpenter.
746 Chrysodomus tabulatus Baird.
747 Chrysodomus tenebrosus Hancock.
748 Chrysodomus verkruzeni Kobelt.
270 Chromodoris californiensis Bergh
2040 Chromodoris McFarlandi
2039 Chromodoris Porteræ
2038 Chromodoris universitatis
23 Clonella subcylindrica
1849 Circinaria Duranti: Santa Barbara Island.
1850 Variety cælata Mazyck.
1851 Variety catalinensis Hemphill. Catalina Island.
1841 Cincinaria Hemphilli
2244 Circinaria kelseyi
1845 Circinaria sportella
1846 Variety hybrida: Ore.—Wash. B. C.
1852 Circinaria transfuga
1842 Circinaria Vancouverensis
1843 Variety occidentalis Hemphill.
1844 Variety Keepi Hemph. Oakland, Cal.
1847 Circinaria voyana
1848 Variety simplicilabris Ancey. Cal.
602 Circulus cerrosensis. Off Cerros Island.
601 Circulus cosmius. Ecuador.
486 Clathurella affinis Dall.
412 Clathurella constricta Gabb.
749 Clathurella crystallina Gabb.
2437 Clathurella Lowei
2137 Clementia solida Dall. 1902.
511 Clementia subdiaphana Carpenter.
103 Clidiophora punctata
3045a Clypidella bimaculata Dall.
238 Clypidella (?) callomarginata Cpr
1457 Clystaxis? polystrigma Dall.
1840 Cochlicopa lubrica
750 Cochliopa rowellii Tryon.
2332 Codakia distinguenda Tryon.
2203 Cœlocentrum irregulare Gabb.
2204 Cœocentrum minorinum Gabbi
2205 Cœocentrum Eisenianum (See No. 2925).
1466 Columbella (Anachis) Arnoldi Dall.
2650 Columbella aurantiaca Dall.
751 Columbella baccata Gaskoin.
171 Columbella (Astyris) carinata Hds
1541 Columbella carinata gausipata Gld.
477 Columbella carinata hindsii Reeve.
752 Columbella chrysalloidea Carpenter.
2352 Columbella fasciata Sby.
2281 Columbella festiva Cpr.
2330 Columbella fuscata Sby.
170 Columbella fuscata Sby
478 Columbella gausapata Gould.
2073 Columbella (Nitidella) Gouldi Cpr.
2280 Columbella major Sby.
2342 Columbella penicillata Cpr.
555 Columbella permodesta Dall.
1465 Columbella (Anarchis) petravis Dall.

172 Columbella (Astyris) tuberosa Cpr.
753 Columna ramentosa J. G. Cooper.
754 Var. abbreviata
1863 Conulus chersinellus Dall.
1200 Conulus fulvus Drap.
1965 Conulus fulvus alaskensis
2270 Conus arcuatus Sby.
67 Conus californicus 3050
2272 Conus gladiatus Brod.
2348 Conus gradatus Mawe.
2271 Conus nux Brod.
2269 Conus princeps Brod.
923 Cooperella scintillæformis Cpr.
2651 Cooperella subdiaphana Cpr.
281 Corbula luteola Cpr
282 Corbula sp. indet.
2511 Corbula luteola rosea
2286 Craspedotriton scalariformis Brod.
2652 Crassatella fluctuata Cpr.
755 Crassatella marginata Carpenter.
2653 Crenella affinis Dall.
2438 Crenella Columbiana Dall.
756 Crenella decussata Montagu.
1449 Crenella megas Dall.
433 Crepidula aculeata Gmelin.
2076 Crepidula grandis Midd.
74 Crepidula dorsata
2522 Crepidula rugosa naticarum
2523 Variety Norrisiarum Williamson.
2524 Crepidula nivea glottidiarum
2298 Crepidula onyx Sby.
187 Crepidula dorsata var lingulata Gld
491 Crepidula excavata Brod.
493 C. navicelloides explanata Gould.
492 C. navicelloides nummaria Gould.
186 Crepidula navicelloides Nutt
75 Crepidula rugosa
1990 Crepidula convexa Say.
Variety glauca Say.
73 Crepidula unguiformis
72 Crucibulum imbricatum
2301 Crucibulum imbricatum Brod.
71 Crucibulum spinosum
757 Crucibulum tubiferum Lesson.
760 Crytobranchia alba Dall.
758 Cryptobranchia concentrica Esch.
759 Var. instabilis Dall.
761 Crytochiton stelleri Middendorf.
551 Crytodon barbarensis Dall.
530 Cryptodon bisectus Dall.
762 Crytodon flexuosus Linne.
763 Crytodon sericatus Carpenter.
102 Cryptomya Californica
294 Cumingia californica Conr
2440 Cuspidaria obesa Lov.
3074 Cuspidaria subglacialis
2654 Cuspidaria striata Jeff.
1273 Cyanoplax hartwegii Carpenter.
1274 Cyanoplax nuttallii Carpenter.
358 Cyathodonta undulata Conrad

1356 Cycladella papyracea Cpr. Mazatlan.
2163 Cyclinella subquadrata Hanl. 1845.
2164 Cyclinella Kroyeri Phil. 1847.
2165 Cyclinella Singleyi Dall. 1902.
600 Cyclostrema diegensis
599 Cyclostrema xantusi. Cape San Lucas.
603 Cyclostremella californica
2655 Cyclichna alba Brown.
1191 Cylichna cylindracea
93 Cylichna inculta
3138 Cylindrella irregulare Gabb, 1867.
3139 Cylindrella Taylori Pfeiffer, 1861.
2081 Cymatium adairense
2349 Cymatium corrugatum Lam. (See 2557).
2557 Cymatium corrugatum tremperi
553 Cymatoica occidentalis Dall.
2684 Cypræa Annettæ
2288 Cypræa arabicula Lam., var.
1601 Cypræa Bayerquei
1602 Cypræa Matthewsonii
68 Cypræa spadicea
1603 Cypræa Squayerii Campbell, Nautilus 7:52, t 2 f 1-2.
2656 Cythara densistriosa Cpr.
2657 Cythara fusconotata Cpr.
2158 Cytherea (Ventricola) Fordi
2159 Cytherea (Ventricola) Magdalenæ Dall. 1902.
2160 Cytherea (Ventricola) rigida Dillwyn. 1817.
2161 Cytherea multicostata Sby. 1835.
764 Cytherea (Amiantis) callosa Conr.
119 Cytherea chionaea
765 Cytherea crassatelloides Conrad.
3084 Variety Pauciradiata
3085 Variety Multiradiata
3086 Variety Alternata
3087 Variety Eccentrica
3088 Variety Serialis
3089 Variety interrupta
3090 Variety Luteobrunnea
3091 Variety Uniradiata
3092 Variety Biradiata
3093 Variety Triradiata
3094 Variety ochracea
3095 Variety Purpureo-chocolata
3096 Variety Biseralialis
3097 Variety Triserialis
3098 Variety Aurora
3099 Variety Duplicata
304 Cytherea undato-striata Cpr
766 Cythna albida Carpenter.
767 Daphnella clathrata Gabb.
768 Daphnella? fuscoligata Dall.
769 Daphnella variegata Carpenter.
770 Darina declivis Carpenter.
771 Denronotus arborescens Muller.
441 Dendronotus iris J. G. Cooper.
772 Dendronotus purpureans? Bergh.
2726 Dentalium Carpenterianum
389 Dentalium hexagonum Sowerby
390 Dentalium indianorum Carpenter
2727 Dentalium megathyris

2441 Dentalium neohexagonum S. & P.
773 Dentalium pretiosum Nuttall.
774 Dentalium rectius Carpenter.
775 Dentalium semipolitum Broderip.
776 Dentalium tetragonum Sowerby.
2425 Dentalium vallicolens
777 Diala acuta Carpenter.
778 Diala marmorea Carpenter.
2728 Diaphana Californica
779 Diapahana debilis Gould.
1192 Diaphana pellucida (See No. 779).
3111 Diastoma fastigiata
Based on Bittium fastigiatum Cpr.
3112 D: Chrysalloidea. Gulf of Cal.
3113 D: Oldroydæ. San Pedro, Cal.
3114 D: Stearnsi. San Diego, Cal.
2729 Diplodonta aleutica
312 Diplodonta orbella Gld
780 Diplodonta semiaspera Philippi.
2765 Discinisca strigata Brod.
2494 Discodoris Healthi
3132 Divaricella eburnea Reeve, 1850.
3133 D: Perparvula Dall, 1901. Cape San Lucas, south.
112 Donax Californicus
This is Desbay's Donax laevigata.
113 Donax flexuosus
2766 Donax lægata Desh.
781 Donax navicula Sowerby.
2498 Doriopsis fulva
267 Doris alabastrina Cooper Cal ac pr 2:204
268 Doris albopunctata Cooper Cal ac pr 3:58 (1863)
266 Doris (Archidoris) montereyensis (Cooper) Bergh
269 Doris (Diaulula) sandiegensis (Cp) Bergh
265 Doris sanguinea Cooper, Cal ac pr 2:204.
1662 Doridium Adellæ Dall.
2247 Dosidicus gigas D'Orbigny. **3065**
2136 Dosinia (Dosinidia) **Annæ** Cpr. 1857.
2135 Dosinia (Dosinidia) **Dunkeri Philippi.** 1844.
137 Dosinia ponderosa
782 Depranostoma yatesi J. G. Cooper.
783 Drillia aurantia Carpenter.
784 Drillia cancellata Carpenter.
1373 Drillia empyrosia
1982 Drillia Emprosia
785 Drillia hemphilli Stearns.
786 Drillia incisa Carpenter.
177 Drillia inermis Cpr
176 Drillia moesta Cpr
2512 Drillia moesta maculata
787 Drillia montereyensis Stearns.
788 Drillia penicillata Carpenter.
487 Drillia torosa Carpenter.
488 Variety **Nitens Carpenter.**
399 Dunkeria laminata Carpenter.
789 Emarginula bella Gabb.
1265 Emarginula crassa J. Sowerby.
1583 Emarginula radiata Gabb.
2007 Ensis californicus Dall.
790 Entodesma inflata Conrad.
360 Entodesma saxicola Baird

287 **Entodesma scammonii** Dall
791 **Eolidia pinnata** Eschscholtz.
1663 **Genus Epiphragmophora** Doering 1875.
1664 **Epiph. ellipsostoma** Pilsbry, Nautilus 8:81.
1717 **E: fidelis**
1718 **Forma flava** Hemphill.
1719 **Forma minor**
1720 **Variety subcarinata** Hemphill.
1721 **Variety infumata** Gould.
1722 **E: mormonum**
1723 **E: Hillebrandi**
1724 **Epiphragmophora circumcarinata**
1725 **E: Dupetilhouarsi**
1726 **E. sequicola**
1727 **E: Ayresiana**
1728 **E. Traskii**
1729 **Variety proles** Hemphill.
1730 **Variety Cuyamacensis** Hemphill.
1731 **Variety Tularensis** Pilsbry.
1732 **E. Carpenteri** (See sub 1505).
1733 **E: Indioensis** (See sub 1507).
1734 **E: Rowellii.** Ft. Grant, Arizona.
1735 **E. Arizonensis** Dall.
1736 **E. Magdalenensis**
1737 **E: Hachitana**
1738 **E. Coloradoensis**
1739 **E: arrosa**
1740 **Forma Holderiana** Cooper.
1741 **Forma Stiversiana** Cooper.
1742 **Forma Marinensis** Pilsbry.
1743 **Variety expansilabris** Pilsbry, Nautilus 12:22.
1744 **E: exarata**
1745 **E: contracostæ** (See sub 1684).
1746 **E: Californiensis**
1747 **Variety Nickliniana**
1748 **Variety Anachoreta**
1749 **Variety ramentosa**
1750 **Variety Bridgesi:** San Pablo, Cal.
1751 **Variety Diabloensis:** San Francisco to Yolo Co., Cal.
1752 **E: tudiculata:** Tulare Co., Cal.
1753 **Variety cypreophila**
1754 **Variety subdolus** Hemphill.
1755 **Variety umbilicata** Pilsbry, Nautilus 12:22.
1756 **Variety Tularensis** Hemphill.
1757 **E: Gabbi:** San Clemente Island, Cal.
1758 **Variety facta:** Santa Barbara and San Nicolas Islands, Cal.
1759 **E: ruficincta:** Catalina Island, Cal.
1760 **E: intercisa:** San Clemente and Santa Cruz Islands, Cal.
1761 **Forma minor** Hemphill.
1762 **Forma elegans** Hemphill.
1763 **Forma nepos** Hemphill.
1764 **Forma albida** Hemphill.
1765 **Forma callojunctis** Pilsbry.
1766 **Variety redimita:** San Clemente Island, Cal.
1767 **Variety castanea** Hemphill.
1768 **Variety hybrida** Hemphill.
1769 **Epiphragmophora Kelletti**
1779-1778 Color forms castanea, nitidia, multilineata, frater, californica, forbesi, bicolor, tricolor, albida, have been named by Hemphill.

1779 E. Tyroni: Santa Barbara and San Nicolas Islands, Cal.
1780-1784 Color varieties varius, nebulosa, fasciata, californica, and albida have been named by Hemphill.
1785 Variety subcarinata Hemphill.
1684 Epiph. californiensis contracostæ
1685 Epiph. Remondi Tryon.
2013 Epiphragmophora Bowersi
2014 Epiphragmophora Harperi Bryant
2086 Epiphragmophora verdensis
2223 Epiphragmophora levis
2224 Epiphragmophora Pandoræ
2254 Epiph. dupetithouarsi cuestana
2133 Epiph. Arnheimi
2216 E. (Micrarionta) Guadelupiana
2217 Epiphragmophora leucanthea
2218 Epiphragmophora Orcutti
2219 Epiphragmophora Stearnsiana
2220 Epiphragmophora crassula
2221 Epiphragmophora areolata
2222 Epiphragmophora Catalinæ
2362-2368 Varieties cypreophila, umbilicata, convicta, subdolus, tularensis, binneyi, and grippi.
2519 Epiph. sequoicola soqueli
2724 Epiphragmophora exorata rubicunda
2550 Epiph. (Micrarionta) Hutsoni
2767 Epitonium
1469 Epitonium (Crisposcala) acrostephanus Dall.
2680 Epitonium (Acrilla) Atwoodi
1470 Epitonium (Crisposcala) Catalinæ Dall.
163 Erato columbella Mke
2528 Erato albescens
2768 Erato mangeriæ Mke.
162 Erato vitellina Hds
3079 Erycina colpoica. Bulf of Cal.
1338 Erycina compressa Dall, 1899. Alaska.
1339 Erycina rugifera Cpr., 1864. Puget Sound.
1337 ?Erycina subquadrata Cpr., 1857. Mazatlan.
792 Ethalia invallata Carpenter.
234 Ethalia supravallata Cpr
2085 Eucalodium (Anisospira) Orcutti
2569 Euconulus fulvus Drap.
218 Eucosmia substriata Cpr.
2920 Eulima Lowei
2921 Eulima Bistorta
2345 Eulima bitorta Van.
797 Eulima compacta Carpenter.
794 Eulima gibba Folin.
796 Eulima incurva Renieri.
1471 ?Eulima Lomana Dall.
1236 Eulima micans Carpenter.
795 Eulima polita Linne.
592 Eulima ptilocrinicola
2769 Eulima Randolphi Van.
2922 Eulima Randolphi
793 Eulima rutila Carpenter.
2770 Eulima solitaria C. B. Ad.
420 Eulima thersites Carpenter.
798 Eulimella occidentalis Hemphill. 3053
3106 Eumeta intercalaris
3107 Eumeta bimarginata C. B. Adams.

498 Eupleura caudata Say.
495 Eupleura muriciformis Broderip.
497 Variety Limata Dall. Gulf of Cal.
496 Variety? Unispinosa Dall. Mazatlan.
799 Euthria dira Reeve.
800 Evalea gracilis Carpenter.
801 Evalea tenuiscuipta Carpenter.
802 Variety incisa Cpr.
809 Fenella laminata Carpenter.
1213 Ferussacia subcylindrica L.
2309 Fissurella alba Cpr.
343 Fissurella (Glyphis) aspera
235 Fissurella (Glyphis) aspera Esch.
2310 Fissurella microtrema Sby.
236 Fissurella (Glyphis) murina Cpr.
2311 Fissurella rugosa Sby.
88 Fissurella violacea
87 Fissurella volcano
1476 Fissurella volcano crucifera Dall.
237 Fissurellidæa bimaculata Dall
810 Fissuridea aspera Eschscholtz.
1582 Fissuridea saturnalis Cpr.
811 Fissuridea murina Carpenter.
804 Flabellina opalescens
1976 Fluminicola Columbiana Hemphill.
1977 Fluminicola seminalis Hinds.
1978 Variety Dalli Call.
1979 Fluminicola erythropoma Pilsbry.
803 Fluminicola fusca Haldeman.
805 Fluminicola hindsi Baird.
1587 Fluminicola Merriami Pilsbry & Beecher.
806 Fluminicola nuclea Lea.
807 Fluminicola nuttalliana Lea.
808 Fluminicola virens Lea.
540 Frieleia halli Dall.
418 Fusus ambustus Gould.
812 Fusus barbarensis Trask.
503 Fusus corpulentus Conrad.
502 Fusus harfordi Stearns.
501 Fusus kobelti Dall.
155 Fusus kobelti Dall, var. unicolor
813 Fusus luteopictus Dall. 3047
814 Fusus polygonoides Lamarck.
2102 Fusus ? polygonoides Lamarck.
1375 Fusus roperi Dall.
2265 Gadinia peruviana Sby.
272 Gadinia reticulata Sby
2334 Galba ferruginea
2259 Galba montanensis Baker, Nautilus 26:115.
446 Galerus contortus Carpenter.
815 Galerus fastigiatus Gould.
816 Galerus mammilaris Broderip.
1436 Ganesa ? Panamensis Dall.
2190 Gemma gemma Totten, 1834.
Variety purpurea H. C. Lea. 1842.
554 Genota carpenteriana Dall.
1434 Gibbula Canfieldi Dall.
2771 Gibbula optabilis Cpr.
393 Gibbula parcipicta Carpenter
817 Gibbula rubescens Carpenter.

1253 Gibbula pulligo Martyn.
550 Glottidia albida Hinds.
357 Glycimeris generosa Gould
1542 Glyphis aspera Esch.
818 Glyptostoma newberryanum Binney.
2043 Glyptostoma Newberryanum depressum
1646 Gnathodon (Rangianella) mendicus Gld. 1851.
2417 Gonidea angulata Lea.
819 Goniobasis acutifilosa Stearns.
820 Goniobasis bairdiana Lea.
821 Goniobasis bulbosa Gould.
822 Goniobasis circumlineata Tryon.
823 Goniobasis draytoni Lea.
824 Goniobasis newberryi, Lea.
825 Goniobasis nigrini Lea.
827 Goniobasis plicifera Lea.
828 Variety bulimoides Tryon.
829 Goniobasis rubiginosa Lea.
830 Goniobasis rudens Reeve.
831 Goniobasis silicula Gould.
2249A Genus Grippina Dall.
2249 Grippina californica Dall.
832 Gundlachia californica Rowell.
2371 Gundlachia Hjalmarsoni Pfr.
233 Haliotis assimilis Dall
1518 Haliotis Californiana Valenciennes.
1517 Haliotis californiensis Swainson.
86 Haliotis corrugata Gray
84 Haliotis cracherodii Leach
1954 Haliotis Cracherodii Californiensis
2708 Haliotis Cracherodii Holzneri
1512 Haliotis fulgens Philippi.
1960 Haliotis fulgens wallallensis
1258 Haliotis gigantea Chemnitz. Japan.
1515 Haliotis glabra Deshayes.
1516 Haliotis interrupta Valenciennes.
833 Haliotis kamtschatkana Jonas.
1514 Haliotis nodosa Philippi.
1513 Haliotis planilirata Reeve.
1519 Haliotis ponderosa C. B. Adams.
834 Haliotis rufescens Swainson.
85 Haliotis splendens Reeve
835 Halistylus pupoideus Carpenter.
1193 Haminea hydatis Linne.
95 Haminea vesicula
96 Haminea virescens
2772 Helicella ventricosa Drap.
2019 Helicodiscus eighenmanni
1921 Helicodiscus lineatus (See Helix).
2583 Heliodiscus parallelus
3170 Helisoma Ammon
1 Helix albolabris
21 Helix albolabris rosa
15 Helix alternata
3140 Helix areolata
1546 Helix armigerus Ancey.
1545 Helix arrosa Gould.
1715 Helix aspersa Mull.
17 Helix asteriscus
2245 Helix avalonensis

1543 **Helix californiensis** Lea.
1544 Variety **Nickliniana** Lea.
1505 **Helix (Arionta) carpenterii** Newcomb
1634 **Helix (Arionta) coloradoensis**
3147 **Helix Damascenus** Gould, 1856.
3 **Helix dentifera**
1939 **Helix devia** Clappi.
3144 **Helix Duranti** (var **Caelata** Mazyck)).
3149 **Helix facta**
1531 **Helix (Polygyrella) Harfordiana**
2108 **Helix (Patula) Hemphilli**
3145 **Helix Kellettii**
18 **Helix labyrinthica**
2109 **Helix (Triodopsis) Levettei** Bland.
3142 **Helix levis**
1547 **Helix loricata** Gould.
2240 **Helix loricata sonomaensis**
2091 **Helix (Arionta) Magdalenensis**
19 **Helix monodon**
3146 **Helix Newberryana**
4 **Helix palliata**
3143 **Helix pandoræ**
1497 **Helix ptychophorus castaneus**
22 **Helix pulchella**
3148 **Helix Rowellii**
2 **Helix sayi**
3150 **Helix Stearnsiana**
16 **Helix striatella**
3151 **Helix Traskii**
3152 **Helix Traskii Carpenteri**
20 **Helix tridentata**
3153 **Helix tudiculata**
1498 **Helix tudiculata subdolus**
3154 **Helix (Vancouverensis** Lea, 1839) var. **Sportella**
3141 **Helix veatchii** Newcomb.
2242 **Helix walkeriana**
2243 Variety **Morroensis**
836 **Hemicardium biangulatum** Sowerby.
1144 **Hemithyris psittacea** Gmelin.
1885 **Hemphillia camelus** Pils. & Van.
837 **Hemphillia glandulosa** W. G. Binney.
1882 **Hesperarion niger** Cooper.
1883 **Hesparion Hemphilli**
110 **Heterodonax bimaculatus**
2080 **Hindsia periderís**
330 **Hinnites giganteus** Gray
435 **Hipponyx antiquatus** Linne.
189 **Hipponyx antiquatus L., var serratus** Cpr
436 **Hipponyx cranioides** Conrad.
2297 **Hipponyx grayanus** Menke.
434 **Hipponyx serratus** Carpenter.
188 **Hipponyx tumens** Cpr
1816 **Holospira bilamellata** Dall.
838 **Holospira arizonensis** Stearns.
2208 **Holospira cionella**
2210 **Holospira chiricahuana**
1815 **Holospira Cockerelli** Dall, Nautilus 11:61.
1818 **Holospira Crossei** Dall.
2953 **Holospira Ferrissi**
1713 **Holospira (Haplostemma) Hamiltoni** 1363

1814 Holospira Mearnsii Dall.
2258 Holospira mesolia
2207 Holospira oaxacana
1667 Holopira pasonis
1819 Holospira pilsbryi Dall.
2209 Holospira regis
1817 Holospira Roemeri
2211 Holospira tantalus
2508 Hopkinsia
2509 Hopkinsia rosacea
6 Hyalina arborea
1199 Hyalina binneyanum Morse.
10 Hyalina exigua
12 Hyalina fulva
7 Hyalina indentata
8 Hyalina lineata
1198 Hyalina milium Morse.
9 Hyalina minuscula
13 Hyalina multidentata
1197 Hyalina radiatula Alder.
11 Hyalina viridula
839 Hydrobia californica Tryon.
194 Ianthina bifida Totten
2710 Ianthina communis
2711 Ianthina exigua Lam.
2709 Ianthina globosa Swainson.
2560 Ilyanassa obsoleta
206 Isapis fenestrata Cpr
430 Isapis obtusa Carpenter.
2353 Ischnochiton acrior
2442 Ischnochiton biarcuatus
2355 Ischnochiton clathratus
2356 Ischnochiton conspicuus
1548 Ischnochiton cooperi Cpr.
2354 Ischnochiton didymus Bartsch.
1275 Ischnochiton interstinctus Gould.
2892 Ischnochiton magdalenensis Hinds.
2758 Ischnochiton magdalensis Hds.
2759 Ischnochiton Mertensii Midd.
2890 Ischnochiton mertensii Midd.
2443 Ischnochiton punctulatissimus Cpr.
840 Ischnochiton radians Carpenter.
2406 Ischnochiton raymondi Pilsbry.
2889 Ischnochiton regularis Cpr.
2757 Ischnochiton regularis Cpr.
1276 Ischnochiton reteporosus Carpenter.
1445 Ischnochiton sarcosus Dall.
1702 Ischnochiton scabricostata Cpr.
1702 Ischnochiton scabricostat Cpr.
1444 Ischnochiton Stearnsii Dall.
2891 Ischnochiton sinudentatus Cpr.
1277 Ischnoradsia mertensii Middendorf.
1278 Ischnoradsia trifida Carpenter.
385 Janira dentata Sowerby
213 Jeffreysia translucens Cpr
841 Katherina tunicata Wood.
315 Kellia laperousii Desh.
842 Kellia rotundata Carpenter.
459 Kellia suborbicularis Montagu.
843 Kennerlia bicarinata Carpenter.

844 Kennerlia filosa Carpenter.
845 Kennerlia grandis Dall.
1647 Labiosa anatina Spengler. 1802. West Mexico.
846 Labiosa undulata Gould. 136
847 Lacuna glacialis Muller.
848 Lacuna porrecta Carpenter.
429 Lacuna solidula Loven.
204 Lacuna unifasciata Cpr
471 Lacuna unifasciata aurantiaca Carpenter.
203 Lacuna variegata Cpr
849 Lacuna vincta Montagu.
2500 Laila
2501 Laila Cockerelli
184 Lamellaria diegoensis
423 Lamellaria stearnsiana Dall.
1947 Lanx patelloidea Lea.
543 Laqueus californicus Koch.
544 Variety Vancouveriensis Davidson.
542 Laqueus jeffreysi Dall.
2677 Laqueus Morsei
314 Lasea rubra Mont
2276 Latirus ceratus Wood.
2350 Latirus lugubris C. B. Adams.
381 Lazaria subquadrata Carpenter
850 Leda acuta Conrad.
317 Leda cælata Hds
2525 Leda amblia
851 Leda cuneata? Sowerby.
652 Leda fossa Baird.
1705 Leda taphria Dall.
1694 Leda cellulita Dall.
1695 Leda leonina Dall.
1696 Leda conceptionis Dall.
1697 Leda pontonia Dall.
384 Leda hamata Carpenter 1446 853
854 Leda minuta O. Fabricius.
3045 Lepeta cæcoides Carp.
1267 Lepidopleurus cancellatus Sby.
2446 Lepidopleurus crebriscostatus Cpr.
1443 Lepidopleurus farallonis Dall.
1441 Lepidopleurus halistreptus Dall.
1442 Lepidopleurus luridus Dall.
2447 Lepidopleurus Mertensi Midd.
1440 Lepidopleurus mesogonus Dall.
2760 Lepidopleurus nexus Cpr. 2888
2761 Lepidopleurus Oldroydi Bartsch.
1665 Lepidopleurus percrassus
2887 Lepidopleurus rugatus Cpr.
855 Leptochiton cancellatus Sowerby.
3042 Leptochiton internexus Carp.
2448 Leptochiton nexus Cpr.
856 Leptochiton punctatus Whiteaves.
857 Leptolimnea kirtlandiana Lea.
858 Lepton dionæum Carpenter.
859 Lepton mercæum Carpenter.
860 Lepton rude Dall.
1336 Lepton umbonatum Cpr., 1857. Mazatlan.
2053 Leptogyra alaskana
230 Leptothyra bacula Cpr
3046 Leptothyra carpenteriana Pilsbry.

411 Leptothyra carpenteri Pilsbry.
861 Leptothyra paucicostata Dall.
2730 Leptothyra paucicostata rubra
231 Leptothyra pauclirata Dall
392 Leptothyra sanguinea Carpenter
232 Leptothyra sanguinea var lurida Dall
1820 Leucocheila fallax
862 Leucozonia cingulata Lamarck.
329 Lima dehiscens Conr
2017 Lima Hamlini
864 Lima inflata Lamarck.
863 Lima orientalis A. Adams.
2315 Lima pacifica Orb.
865 Limatula subauriculata Montagu.
1195 Limax agrestis L.
866 Limax (berendti?) hemphilli W. G. Binney.
867 Limax (gagates?) hewstoni J. G. Cooper.
868 Limax campestris Binney.
1196 Limax hyperboreus Westerlund.
869 Limax maximus Linne.
1550 Limax campestris occidentalis Cpr.
1551 Variety zonatipes Cockerell.
870 Limnæa adelinæ Tryon.
1215 Limnæa ampla Mighels.
2731 Limnæa Atkana
2256 Lymnæa auricularia L.
2722 Lymnæa bulimoides Lea.
2059 Lymnæa bulimoides techella Hald.
43 Limnaea caperata
42 Limnaea desidiosa
871 Limnæa emarginata Say.
2687 Lymnæa hendersoni
2516 Lymnæa Hinkleyi
872 Limnæa humilis Say.
2721 Lymnæa humilis modicella
1552 Limnæa obrussa Say.
1553 Limnæa humilis ferruginea Hald.
1554 Limnæa palustris Traskii Tryon.
1555 Variety proxima Lea.
1556 Variety Nuttalliana Lea.
1557 Variety Rowellii Tryon.
1558 Variety umbrosa Say.
1559 Limnæa bombycina Lange.
1502 Limnæa (Leptolimnea) Pilsbryi Hemphill.
1503 Limnæa stagnalis occidentalis
873 Limnæa lepida Gould.
1216 Limnæa nuttalliana Lea.
894 Limnæa palustris Mueller.
41 Limnaea palustris
3155 Limnophysa humilis
1450 Limopsis Panamensis Dall.
532 Limopsis vaginatus Dall.
352 Lingula albida Hinds
122 Liocardium elatum
123 Liocardium substriatum
377 Liocardium substriatum major Yates
2183 Liocyma Beckii Dall. 1870.
2184 Liocyma viridis Dall. 1871.
2185 Liocyma Scammoni Dall. 1871.
219 Liotia acuticostata Cpr.

1397 Liomesus canaliculatus Dall.
2031 Liomesus nassula
1396 Liomesus Nux Dall.
1398 Liomesus ooides Middendorf.
2762 Liostraca varians Sby.
2763 Liotia acuticostata Cpr.
875 Liotia fenestrata Carpenter.
3071 Liotia lurida
876 Lithophagus attenuatus Deshayes.
328 Lithophagus plumula Hanley
1428 Litorina aleutica Dall, Cal ac pr 4:271, t 1 f 3, 3a.
1609 Litorina (Tectarius) Galapagiensis
1611 Litorina (Tectarius) atyphus
2296 Litorina conspersa Phil.
1429 Litorina atkana Dall.
2764 Littorina grandis Midd.
77 Litorina planaxis
2748 Littorina pullata Cpr. 1864.
877 Littorina rudis Donovan.
76 Litorina scutulata
878 Littorina sitkana Philippi.
879 Loligo stearnsii Hemphill.
552 Lophocardium annettæ Dall.
92 Lottia gigantea
89 Lucapina crenulata
2749 Lucapinella callomarginata Cpr.
2444 Lucina annulata Rve.
2445 Lucina approximata Dall.
880 Lucina bella Conrad.
881 Lucina borealis Linne.
311 Lucina californica Conr
2449 Lunatia Draconis
2704 Lucina edentuloides Verrill.
882 Lucina filosa Stimpson.
2097 Lucina æquizonata
310 Lucina nuttallii Conr
883 Lucina tenuisculpta Carpenter.
182 Lunatia lewisii Gld
1251 Lunatia pallida Broderip and Sowerby.
291 Lutricola alta Conr
105 Lyonsia Californica
2275 Lyria barnesii Gray.
1716 Lysinœ Humboldtiana
3076 Lyonsia (Allogramma) Amabilis
2750 Lyonsia inflata Conr.
2751 Lyonsia nitida Conr.
3077 Lyonsia pugetensis
1549 Lyonsia (Entodesma) saxicola Baird.
1575 Lysinœ fidelis Gray.
1208 Lysinœ townsendiana Lea.
365 Machaera patula Dixon
884 Macoma calcarea Chemnitz.
885 Macoma carlottensis Whiteaves.
886 Macoma edentula Broderip.
887 Macoma edulis Nuttall.
888 Macoma expansa Carpenter.
368 Macoma inconspicua Broderip.
111 Macoma indentata
1177 Macoma inflatula Dall.
298 Macoma secta Conr.

299 Macoma inquinata Desh
1176 Macoma lata Gmelin.
367 Macoma nasuta Conrad
889 Macoma obtusa Carpenter.
890 Macoma sabulosa Spengler.
366 Macoma yoldiformis Carpenter
2145 Macrocallista squalida Sowerby. 1835.
2146 Macrocallista aurantiaca Sby. 1831.
2147 Macrocallista pannosa Sby. 1835.
2148 Macrocallista puella Cpr. 1864.
14 Macrocyclis concava
2231 Macrochasma crenulata
2450 Macromphalina Californica
591 Macromphalina occidentalis
64 Macron aethiops
157 Macron lividus A Ad
891 Mactra californica Conrad.
289 Mactra falcata Gld
288 Mactra planulata Conr
1625 Mactra catilliformis Dall.
1626 Mactra Hemphillii Dall.
1627 Mactra dolabriformis Conrad, 1867.
1628 Mactra polynyma Alaskana
1635 Mactra (Mactroderma) velota Phil. 1848.
1636 Mactra (Mactrotoma) nasuta Gld. 1851.
1637 Mactra (Mactrella) exoleta Gray, 1837.
1638 Mactra (Mactrella) elegans Sby. 1825.
2526 Magilia perattenuata
178 Mangilia angulata Cpr
892 Mangilia bicarinata Couthouy.
893 Mangilia crebricostata Carpenter.
2451 Mangilia densistriosa Cpr.
2452 Mangilia Fancheræ
894 Mangilia funebrale Dall.
895 Mangilia hemphilli Stearns.
485 Mangillia interlirata Stearns.
896 Mangilia hexagona Gabb.
897 Mangilia interfossa Carpenter.
898 Mangilia levidensis Carpenter.
899 Mangilia merita Gould.
2732 Mangilia Painei
900 Mangilia sculpturata Dall.
901 Mangilia striosa C. B. Adams.
397 Mangilia variegata Carpenter.
398 Variety Nitens Carpenter.
2137 Marcia Kennerleyi Rve. 1864.
2174 Marcia (Venerella) subdiaphana
394 Margarita acuticostata Carpenter
902 Margarita canfieldi Dall.
903 Margarita helicina O. Fabricius.
904 Margarita lirulata Carpenter.
2752 Margarita lirulata subelevata Cpr.
905 Margarita pupilla Gould.
2753 Margarita pupilla salmonea Cpr.
2915 Margarita sharpii
1255 Margarita vahlii Moller.
3072 Margarites simblus
907 Marginella Pyriformis Carpenter.
906 Margarita varicosa Mighels.
58 Margaritana undulata

1153 Margaritana margaritifera L.
1437 Margarites vorticiferus Dall, Cal ac pr 5:59, t 2, f 4a-b.
424 Marginella jewetti Carpenter.
2338 Marginella politula Cooper.
164 Marginella regularis Cpr
165 Marginella subtrigona Cpr
908 Marginella varia Sowerby.
276 Martesia intercalata Cpr
1266 Megatebennus bimaculatus Dall.
97 Melampus olivaceus
2093 Melania acutifilosa
46 Melantho decisa
927 Melaniella? eiseniana J. G. Cooper.
2701 Melina Chemnitziana
2754 Menetus opercularis Gld.
910 Mesalia reticulata Mighels.
207 Mesalia tenuisculpta Cpr
369 Mera modesta Carpenter
468 Mera obtusa Carpenter.
373 Merethrix toreuma Gould
909 Magerlia jeffreysi Dall.
911 Mesodon armigerus Ancey.
1209 Mesodon columbianus Lea.
1210 Mesodon devius Gould.
573 Metaxia diadema
2453 Metzgeria Californica
2574 Micrarionta desertorum
912 Microphysa conspecta Bland. (See 1206.)
913 Microphysa ingersolii Bland.
914 Microphysa lansingi. (See 2743.)
915 Microphysa pygmæa Draparnaud.
916 Microphysa stearnsi (See 2744.)
2572 Milax gagates plumbea
917 Miralda quinquecincta Carpenter.
918 Milneria halioticola Dall.
321 Milneria minima Dall
1158 Miodon prolongatus Carpenter.
2735 Miralda Californica
2697 Mitra Belcheri Swainson.
2734 Mitra dolorosa
2552 Mitra Fultoni
2273 Mitra funiculata Reeve.
2553 Mitra Idæ Melville.
2700 Mitra lens
2337 Mitra lowei Dall. 2454
161 Mitra maura Swains
2094 Mitra nodocancellata
2554 Mitra orientalis Gray.
432 Mitromorpha aspera Carpenter.
919 Mitromorpha effusa Carpenter.
179 Mitromorpha filosa Cpr
2712 Mitramorpha filosa intermedia
2336 Mitromorpha gracilior Hemphill.
127 Modiola capax
920 Modiola fornicata Carpenter.
460 Modiola modiolus Linne.
2455 Modiola polita Verrill.
324 Modiola recta Conr
2003 Modiola plicatula Lam.
2755 Modiolus demissus Dillwyn.

2696 Modiolus Diegensis
2344 Modiolus opifex Say.
921 Modiolaria corrugata Stimpson.
325 Modiolaria denticulata Dall
922 Modiolaria lævigata Gray.
923 Modiolaria marmorata Forbes.
924 Modiolaria nigra Gray.
925 Modiolaria taylori Dall.
1170 Moera salmonea Carpenter.
515 Mohnia frielei Dall.
2404 Monia macroschisma Desh.
152 Monoceros engonatum Conr
154 Monoceros engonatum var. spiratum Blainv
416 Monoceros lapilloides Conrad.
151 Monoceros lugubre Sby
153 Monoceros pauciliratum Stearns
2492 Montereina
2493 Montereina nobilis
1280 Mopalia ciliata Sowerby.
1561 Mopalia ciliata Hindsii Sby.
1281 Mopalia lignosa Gould.
926 Mopalia sinuata Carpenter.
1282 Mopalia wossnessenskii Middendorf.
1700 Mopalia imporcata Cpr.
3041 Mopalia vespertina Gould.
1579 Mopalia Wossnessenskii Swansii
2894 Mopalia muscosa Gould.
2895 Variety Lignosa Gould.
2896 Variety Hindsii Reeve.
2885 Mopalia heathii Pilsbry.
2287 Morum tuberculosum Sby.
1644 Mulinia palida Brod. & Sby. 1829.
1645 Mulinia Gabbi Tryon. 1869.
1620 Mulinia modesta Dall, Nautilus 8:5 t 1 f (lower).
1630 Mulinia coloradoensis Dall, Nautilus 8:6, t 1, upper f.
1631 Variety acuta Dall. Nautilus 8:6 t 1 left f.
1632 Mulinia Bradleyi Dall, Nautilus 8:6.
2456 Murex Californicus Dall.
1400 Murex (Pteropurpura) Carpenteri Dall.
2238 Murex carpenteri tremperi
2562 Murex Carpenteri alba
560 Murex (Chicoreus) leeanus Dall. Off Cerros Isl.
1401 Murex (Pteropurpura) petri Dall, Nautilus 14:37 (1900).
2457 Murex Painei
2103 Murex palma-rosæ Mexicana
2530 Murex (Phyllonotus) santarosana
140 Murex trialatus Sby
142 Muricidea barbarensis Gabb
2411 Muricidea californica Hinds.
930 Muricidea circumtexta Stearns.
2285 Muricidea dubia Sby.
407 Muricidea fasceolata Hinds.
931 Muricidea foveolata Hinds.
928 Muricidea gracillima Stearns.
2458 Muricidea incessa Brod.
143 Muricidea incisa Brod
929 Muricidea interfossa Carpenter.
932 Muricidea lurida Middendorf.
933 Muricidea poulsoni Carpenter.
934 Muricidea salebrosa King.

2459 Muricidea Santarosana Dall.
935 Muricidea squamulifera Carpenter.
417 Muricidea subangulata Stearns.
2365 Musculium Raymondi Cp.
2416 Musculus phenax Dall, Nautilus 28:138.
936 Mya arenaria Linne.
937 Mya truncata Linne.
2212 Myoforceps aristatus Dillwyn.
1343 Mysella aleutica Dall. Sitka.
1344 M. chalcedonica Cpr. (sub Montacuta). Mazatlan.
1345 M. clementina Cpr. (sub Lepton). Mazatlan.
1346 M. dinonæa Cpr. (sub Lepton). Mazatlan.
1347 M. elliptica Cpr. (sub Montacuta). Mazatlan.
1348 M. obtusa Cpr. (sub Montacuta). Mazatlan.
1349 M. pedroana Dall. San Pedro, Cal.
1350 M. Planata Dall. Alaska..
1351 M. sublævis Cpr. (sub Pythina). Mazatlan.
1352 M.? subquadrata Cpr. (sub Montacuta). Mazatlan.
1353 M. tumida Cpr. (sub Tellimya). Alaska to San Diego.
361 Mytilimeria nuttalli Conrad
323 Mytilus bifurcatus .See 1949.
126 Mytilus Californianus
322 Mytilus edulis Linne
1560 Mytilus edulis glomeratus Gld.
1949 Mytilus Stearnsi
66 Myurella simplex
341 Nacella depicta
340 Nacella incessa
342 Nacella paleacea
1612 Nassa brunnesostoma
938 Nassa complanata Powys.
406 Nassa cooperi Forbes.
2279 Nassa corpulenta C. B. Adams.
158 Nassa fossata Gould
939 Nassa insculpta Carpenter.
425 Nassa mendica Gould.
160 Nassa mendica var, cooperi Fbs
159 Nassa perpinguis Hinds
2714 Nassa perpinguis bifasciata
65 Nassa Tegula
2302 Natica chemnitzianum Pfr.
1250 Natica clausa Broderip and Sowerby.
940 Natica lewisi Gould.
941 Natica marocriensis Gmelin.
942 Natica pallida Broderip.
2460 Natica russa Gld.
943 Navarchus inermis J. G. Cooper.
2461 Neara Californica Dall.
359 Neaera pectinata Carpenter
455 Neaplysia californica J. G. Cooper
465 Neptunea (Chrysodomus) Lirata Martyn.
2308 Nerita bernhardi Recl.
3166 Neritina Californica Reeve, 1845.
3167 Neritina cassiculum Sowerby, 1832.
3168 Neritina picta Sowerby, 1832.
273 Netastomella darwinii Sby
69 Neverita reclusiana
2284 Nitidella cribraria Lam.
464 Nitidella gouldii Carpenter.
1610 Nitidella incerta

225 **Norrisia norrisii** Sby
2462 **Nucula Belloti** A. Ad.
1154 **Nucula castrensis** Hinds.
944 **Nucula expansa** Reeve.
1155 **Nucula lyalli** Baird.
463 **Nucula tenuis** Montagu.
2886 **Nuttallina Thomasi** Pilsbry.
2893 **Nuttallina Californica** Reeve.
1279 **Nuttalina scabra** Reeve.
201 **Obeliscus variegatus** Cpr
945 **Ocinebra circumtexta**
147 **Ocinebra gracillima** Stearns
946 **Odostomia inflata** Carpenter.
146 **Ocinebra interfossa** Cpr.
148 **Ocinebra interlirata** Stearns
2104 **Ocinebra lugubris**
408 **Ocinebra lurida** Middendorf.
149 **Ocinebra poulsonii** Nutt
145 **Ocinebra subangulata** Stearns
1671 **Ocinebra circumtexta aurantia**
2239 **Ocinebra stearnsi**
3063 **Octopus bimaculatus** Verrill.
139 **Octopus punctatus** Gabb

2824 **Genus Odostomia Fleming.**
2343 **Odostomia helga** Dall & Bartsch.
2705 **Odostomia (Amaura) talpa** Dall & Bartsch.
2825 **O: laxa.** Scammon Lagoon, Baja Cal.
2826 **O: Richi.** San Pedro.
2736 **Odostomia Oldroydi**
2737 **Odostomia inflexa**
2571 **Odostomia (Amaura) Canfieldi**
2561 **Odostomia tenricula**
2827 **O: callimorpha.** San Pedro.
2828 **O: Ritteri.** Catalina I.
2829 **O: Eugena.** San Hipolito Point, Baja Cal.
2830 **O: trachis.** San Pedro.
196 **Odostomia inflata** Cpr
2831 **O: lucca.** San Diego.
2832 **O: Clementina.** San Clemente I.
2833 **O: Oldroydi.** San Diego.
2834 **O: cincta.** Santa Barbara.
2835 **O: vicola.** San Pedro.
2836 **O: pulcia.** San Pedro.
2837 **O: virginalis.** Todos Santos bay, Baja Cal.
2838 **O: promeces.** Todos Santos bay, Baja Cal.
2839 **O: pulcherrima.** Terminal Island.
2840 **O: vincta.** San Pedro.
2841 **O: sanctorum.** Todos Santos bay, Baja Cal.
2842 **O: sapia.** San Diego.
2843 **O: Pedroana.** San Pedro.
2844 **O: Hemphilli.** San Hippolito Point, Baja Cal.
2845 **O: Æpynota.** San Pedro.
2846 **O: turricula.** San Pedro.
2847 **O: Americana.** San Pedro
2848 **O: Eucosmia.** Point Abreojos, Baja Cal.
2849 **O: amilda.** San Diego.
2850 **O: farma.** Catalina I.
2851 **O: enora.** San Pedro.
2852 **O: fetella.** San Diego.

2853 O: **esilda.** San Diego.
2854 O: **herilda.** San Diego.
2855 O: **nemo.** San Diego.
2856 O: **Io.** Santa Rosa I.
2857 O: **patroma.** Santa Rosa I.
2858 O: **obesa.** San Pedro.
2859 O: **phanella.** San Pedro Sby.
2860 O: **Santa Rosana.** Santa Rosa I.
2861 O: **donilla.** San Pedro.
2862 O: **Californica.** Ocean Beach, San Diego.
2863 O: **serilla.** San Diego.
2864 O: **minutissima.** San Diego.
2865 O: **Raymondi.** Catalina I.
2866 O: **gravida.** Santa Barbara.
2867 O: **notilla.** Catalina I.
2868 O: **movilla.** San Diego.
2869 O: **altina.** San Diego.
2870 O: **profundicola.** San Diego.
2871 O: **resina.** Arch Beach.
2872 O: **deliciosa.** Monterey.
2873 O: **lastra.** Cal.
2874 O: **Farallonensis.** Farallones Islands.
2875 O: **orcia.** Santa Rosa I.
2876 O: **avellana.** Neah bay, Wash.
2877 O: **moratora.** Point Reyes.
2878 O: **nota.** San Diego.
2879 O: **subturrita.** San Pedro.
2880 O: **farella.** Long Beach.
2881 O: **dinella.** Redondo.
2882 O: **Coronadoensis.** Coronado Beach.
1240 **Odostomia satura Gouldii** Carpenter.
2058 **Odostomia** (Evelea) **Cookeana**
197 **Odostomia æquisculpta** Cpr
1312 **Odostomia** (Iolæe) **amianta**
1317 **Odostomia** (Evalia) **angularis**
1307 **Odostomia** (Chrysallida) **astricta**
1472 **Odostomia** (Evalea) **atossa** Dall.
1325 **O. nuciformis avellana** Cpr.
470 **Odostomia avellana gouldii** Carpenter.
1319 **Odostomia** (Evalea) **columbiana**
1306 **Odostomia** (Chrysallida) **cooperi**
1320 **Odostomia** (Evalea) **deliciosa**
1327 **Odostomia** (Amaura) **Gouldii** Carpenter.
1315 **Odostomia** (Menestho) **exara**
419 **Odostomia gravida** Gould.
1314 **Odostomia** (Menestho) **harfordensis**
1318 **Odostomia** (Evalia) **jewetti**
1324 **Odostomia** (Amaura) **kennerleyi**
1308 **Odostomia** (Chrysallida) **montereyensis**
1326 **Odostomia** (Amaura) **montereyensis**
1310 **Odostomia** (Ividia) **navisa**
1311 Variety **Delmontensis**
947 **Odostomia nuciformis** Carpenter.
195 **Odostomia nuciformis** Cpr var **avellana Cpr**
1309 **Odostomia** (Chrysallida) **oregonensis**
1323 **Odostomia** (Evalea) **phanea**
1312 **Odostomia** (Menestho) **pharcida**
948 **Odostomia satura** Carpenter.
949 **Odostomia sitkensis** Dall.
950 **Odostomia straminea** Carpenter.

1321 Odostomia (Evalea) tacomaensis
951 Odostomia tenuisculpta Carpenter.
1316 Odostomia (Evalea) tillamookensis
1322 Odostomia (Evalea) valdezi
292 Œdalina subdiaphana Cpr
168 Olivella biplicata Sby
169 Olivella bœtica Cpr
1666 Olivella gracilis Gaylordi
2407 Olivella intorta Cpr.
2051 Olivella (anazora Ducl. var.?) Porteri
952 Ommastrephes giganteus Orbigny. See 2247.
955 Ommastrephes robustus Dall.
953 Ommastrephes sagittatus Lamarck.
954 Ommastrephes tryoni Gabb.
83 Omphalius aureotinctus
220 Omphalius fuscescens Phil
2101 Onchidella Binneyi
956 Onchidella borealis Dall.
957 Onchidella carpenteri W. G. Binney.
1214 Onchidium carpenteri W. G. Binuey.
2057 Onoba asser
3060 Onychoteuthis Banksii (Leach 1817) Ferussac.
1283 Onychoteuthis fusiformis Gabb. Puget Sound? (Kennerley). Victoria?
958 Opalia borealis Gould.
421 Opalia bullata Carpenter.
193 Opalia crenatoides Cpr
474 Opalia crenatoides insculpta Cooper.
1467 Opalia (Dentiscala) Mazatlanica Dall.
1468 Opalia (Dentiscala) Mexicana Dall.
959 Opalia retiporosa Carpenter.
960 Opalia spongiosa Carpenter.
1608 Orchidium Lesliei

2955 Genus Oreohelix Pilsbry.
2956 Oreohelix strigosa
2957 Variety concentrata. Arizona.
2958 Variety Huachucana. Arizona.
2959 Variety Socorroensis. New Mexico.
2481 Oreohelix Clappi
2490 Oreohelix strigosa metcalfei
2333 Orehelix haydeni betheli
2360 Oreohelix hendersoni dakani
2369 Oreohelix yavapai extremitatis
2370 Oreoheilx pygmæa
2960 Oreohelix barbata
2961 Oreohelix Yavapai
2962 Variety Neomexicana. N. M.
2963 Oreohelix Chiricahuana
2520 Oreohelix yavapai compactula
2257 Oreohelix carinifera
2252 Oreohelix hendersoni
962 Oscilla insculpta Carpenter.
961 Ostrea amara Carpenter.
386 Ostrea concaphila Carpenter
387 Variety Rufoides Carpenter
135 Ostrea lurida Cpr.
1145 Ostrea virginica Gmelin.
2383 Ostrea iridescens Gray, 1854.
2384 Ostrea megodon Hanley, 1845.

2385 Ostrea fisheri Dall.
2386 Ostrea veatchii Gabb, 1866.
2387 Ostrea cumingiana Dunker.
2388 Variety Mexicana Sby.
2389 Ostrea palmula Cpr.
2390 Ostrea serra Dall.
2391 Ostrea columbiensis Hanley.
2392 Ostrea elongata Solander. 1786.
2393 Ostrea chilensis Philippi.
2394 Ostrea multistriata Hanley. 1846.
2395 Ostrea tubulifera Dall.
3407 Ovula Vidleri Sby. 1881.
963 Ovulum barbarense Dall.
964 Ovulum formicarium Sowerby.
1252 Pachypoma inæquale Martyn.
2698 Pachypoma inæquale spiratum
2053 Pachypoma magdalena
2054 Pachypoma lithophorum
1968 Genus Paludestrina Ofb.
1969 Paludestrina longinqua
1970 Paludestrina imitator Pilsbry.
1971 Paludestrina Stearnsiana
1973 Paludestrina Hemphilli
1974 Paludestrina protea
2002 Paludestrina Seemanni
1586 Paludina Japonica Mart.
1248 Paludinella castanea Cpr.
965 Paludinella newcombiana Hemphill.
2463 Pandora bicarinata Cpr.
284 Pandora (Clidiophora) punctata Cpr
1453 Panomya ampla Dall.
1186 Panopæa generosa Gould.
1452 Panopea globosa Dall.
1185 Panopæa novegica Spengler.
2175 Paphia grata
2176 Paphia staminea
2177 Variety petiti Desh. 1839.
2178 Variety laciniata Cpr. 1864.
2179 Variety ruderata Deshayes. 1853.
2180 Variety orbella Cpr. 1864.
2181 Variety sulculosa Dall. 1892.
2182 Paphia (Callithaca) tenerrima
2323 Paradione squalida Sby.
274 Parapholas californica Conr
2756 Parthenia quinquecincta Cpr.
1205 Patula asterisca
2738 Patula Chiricahuana Ashmuni
966 Patula horni Gabb.
967 Patula idahoensis Newcomb.
968 Patula pauper Gould.
969 Patula solitaria Say.
1204 Patula striatella
1588 Patula strigosa Gould.
1484 Variety albida. Near Logan, Utah.
1479 Variety carnea. Near Salt Lake, Utah.
1485 Variety fragilis. Near Franklin, Idaho.
1483 Variety hybrida. Near Logan, Utah.
1482 Variety parma. Near Spokane Falls, Wash.
1480 Variety picta. Rathdrum, Idaho.
1481 Variety rugosa. New Brigham City, Utah.

1670 Patulastra? pugetensis
133 Pecten aequisulcatus
970 Pecten alaskensis Dall.
3073 Pecten (Pseudamusium) Arces
1146 Pecten rubidus Hinds.
1147 Pecten (Pseudamusium) vancouverensis Whiteaves.
1447 Pecten Randolphi Dall, Nautilus 11:86.
1448 Pecten Davidsoni Dall, Nautilus 11:86.
971 Pecten caurinus Gould.
972 Pecten floridus Hinds.
2376 Pecten (Euvola) cataractes Dall. Gulf of Cal.
2377 Pecten hericius Gould.
2378 Variety albida Dall.
2379 Pecten islandicus Mull.
2380 Pecten rubidus Hinds.
2464 Pecten Vancouverensis Whiteaves.
2405 Pecten giganteus Gray.
451 Pecten hastatus Sowerby.
451 Variety Hindsi Carpenter.
973 Pecten hindsi Carpenter.
974 Pecten islandicus Muller.
454 Pecten latiauritus Conrad.
1942 Pecten Palmeri Dall, Nautilus 11:85. Gulf of Cal. (Edward Palmer).
1943 Pecten Davidsoni
2026 Pecten (Lyropecten) Dilleri
1944 Pecten Randolphi
132 Pecten monotimeris
453 Pecten paucicostatus Carpenter.
131 Pecten subnodosus
2739 Pecten Whiteavesi
975 Pedicularia californica Newcomb. 1426
271 Pedipes liratus Binney
98 Pedipes unisulcatus
976 Penitella curvata Tryon.
1187 Penitella ovoidea
275 Penitella penita Conr
977 Periploma discus Stearns.
978 Petaloconchus macrophragma Carpenter.
979 Phenacarion foliolatum Gould.
106 Periploma argentaria
2098 Periploma planiuscula Sby.
2424 Periploma sulcata
2314 Perna chemnitzianum Orb.
1175 Peronæa bodegensis Hinds.
300 Petricola carditoides Conr
2012 Perticola denticulata Sby.
2011 Petricola cognata C. B. Adams.
3116 Phacoides (Here) Richthofeni Gabb, 1866.
3117 Phacoides (Cavilucina) Lamprus Dall, 1901. Gulf of Cal.
3118 Phacoides (Cavilucina) lingualis Cpr. 1864.
3119 Phacoides (Cavilucina) prolongatus Cpr. 1857.
3120 Phacoides (Pleurolucina) undatus Cpr. 1865.
3121 Phacoides (Lucinisca) fenestratus Hinds, 1844.
3122 Phacoides (Lucinisca) Nuttallii Conr. 1837.
3123 Phacoides (Miltha) Childreni Gray, 1825.
3124 Phacoides (Pseudomiltha) tellinoides Reeve, 1850.
3125 Phacoides (Lucinoma)) heroicus Dall, 1901.
2489 Phacoides (Miltha) Zantusi
2316 Phacoides lamprus Dall.

3126 Phacoides (Lucinoma) annulatus Reeve, 1850.
3127 Phacoides (Lucinoma) æquizonatus Stearns, 1890.
3128 Phacoides (Epilucina Californicus
3129 Phacoides (Parvilucina) tenuicsulptus Cpr. 1865.
3130 Phacoides (Parvilucina) approximatus Dall, 1901.
3131 Phacoides (Bellucina) cancellaris Philippi, 1846.
217 Phasianella compta Gld
490 Phasianella compta pulloides Carpenter.
1474 Phasianella (Tricolia) compta producta Dall.
447 Phidiana iodinea
980 Phidiana iodinea J. G. Cooper.
260 Philine, species indet.
383 Philobrya setosa Cooper
355 Pholadidea ovoidea Gould
354 Pholadidea penita Conrad
1572 Pholadidea penita parva Tryon.
2683 Pholadomya Pacifica
981 Pholas crispata Linne.
982 Pholas pacifica
983 Phyllaplysia taylori
2023 Phyllaphysia Taylori
984 Physa ampullacea Gould.
1504 Physa ampullacea columbiana
991 Physa heterostropha Say. 34
992 Physa humerosa Gld.
3156 Physa elata Gould.
3157 Physa aurantia Carpenter.
989 Physa Gabbii Tryon.
988 Physa diaphana Tryon.
33 Physa ancillaria
985 Physa blandi Lea.
986 Physa carltoni Lea.
987 Physa costata Newcomb.
335 Physa d'orbigniana Lea.
990 Physa gyrina Say.
993 Physa hypnorum Linne.
1564 Physa Gabbi D'Orbignyana Lea.
1565 Variety Traskii Lea.
1566 Physa virginea Gould.
2586 Physa Cooperi Tryon.
2567 Physa politissima Tryon.
994 Physa Lordi Baird.
995 Physa malleata Tryon.
449 Physa traskii Lea.
996 Physa triticea Lea.
129 Pinna lanceolata
49 Pisidium adamsi
2723 Pisidium Ashmuni
1953 Pisidium Roperi
50 Pisidium compressum
1510 Pisidium Idahoense Roper.
2690 Pisidium Marci
2382 Pisidium huachucanum Pils.
1691 Pisidium Randolphii Roper.
2564 Pisidium Californicum Newc.
1031 Pisidium occidentale Newcomb.
1032 Pisidium insigne Gabb.
1033 Pisidium ferrugineum Morse.
1034 Pisidium compressum Prime.
1035 Pisidium abditum Haldeman.

1036 **Pisidium ultramontanum** Prime.
1704 **Pisidium scutellatum**
1168 **Pisidium variabile** Prime.
51 **Pisidium virginicum**
997 **Pilidium fulvum** Muller.
2150 **Pitaria Newcombiana** Gabb. 1865.
2151 **Pitaria unicolor** Sby. 1835.
2153 **Pitaria vulnerata** Brod. 1835.
2154 **Pitaria lupanaria** Lesson. 1832.
2155 **Pitaria rosea** Brod. & Sby. 1829.
2156 **P: (Lamelliconcha) concinna** Sby. 1835.
2157 **P: circinata alternata** Brod. 1835.
998 **Placiphorella latior** Carpenter.
999 **Placiphorella imporcata** Carpenter.
1000 **Placiphorella sinuata** Carpenter.
1001 **Placiphorella velata** Carpenter.
331 **Placunanomia macroschisma** Desh
2294 **Planaxis nigritella** Forbes.
2295 Variety —?
1002 **Planorbis ammon** Gould.
37 **Planorbis bicarinatus**
1682 **Planorbis callioglyptus**
36 **Planorbis campanulatus**
1004 **Planorbis deflectus** Say.
1005 **Planorbis exacutus** Say. 38
3171 **Planorbis Gracilentus** Gould, 1855. 1006
1007 **Planorbis hornii** Tryan.
39 **Planorbis Lentus**
1008 **Planorbis opercularis** Gould.
2131 **Planorbis Liebmanni** Dunker.
1994 **Planorbis opercularis multilineatus**
1683 **Planorbis opercularis oregonensis**
40 **Planorbis parvus**
1217 **Planorbis trivolvis** Say.
1680 **Planorbis centervillensis** Tryon.
1710 **Planorbis nautileus** L.
2329 **Planorbis petenensis** Morel.
1012 **Planorbis tumidus** Pfeiffer.
1658 **Planorbis umbilicatellus** Cockerell.
1013 **Planorbis vermicularis** Gould.
332 **Platidia anomioides** (Scacchi) Costa var?
279 **Platyodon cancellata** Conr
1014 **Plectodon scaber** Carpenter.
1015 **Pleurobranchus californicus**
1372 **Pleurotoma callicesta.** Acapulco. 600 fms.
1562 **Pleurotoma Carpenteriana** Gabb.
2427 **Pleurotoma** (Antiplanes) **Catalinæ**
1371 **Pleurotoma circinata**
2430 **Pleurotoma** (Genota) **Cooperi** Arnold. Quaternary.
1016 **Pleurotoma hemphillii**
1017 **Pleurotoma montereyensis**
1018 **Pleurotoma luctuosa** Hinds
1366 **Pleurotoma** (Antiplanes) **perversa** Gabb.
1368 **Pleurotoma** (Antiplanes) **piona.** Bering sea.
2428 **Pleurotoma** (Genota) **Riversiana**
1370 **Pleurotoma** (Antiplanes) **santarosana**
2426 **Pleurotoma** (Genota) **Stearnsiana**
1369 **Pleurotoma** (Antiplanes) **thalæa**
2429 **Pleurotoma** (Genota) **Tryoniana** Gabb. Tertiary to recent.
1019 **Pleurotoma tuberculifera** Gray.

1219 **Pleurotoma vancouverensis** E. A. Smith, Am Mag Nat Hist ser 5, 6:286 (1880).
1367 **Pleurotoma** (Antiplanes) **vinosa.** Bering Sea.
2408 **Polynices draconica** Dall.
2074 **Polinices Lewisii**
2075 **Polinices pallidus** Brod. & Sby.
2303 **Polynices uber** Val.
2504 **Polycera atra**
1802 **Polygyra armigera**
1789 **Polygyra Ashmuni** Dall.
1800 **Polygyra Columbiana**
1801 Variety **labiosa**
1792 **Polygyra devia**
1796 Variety **Clappi**: Salmon river, Idaho.
1797 Variety **Blandi**: Idaho.
1795 Variety **Harfordiana**: Salmon river, Idaho.
1793 Variety **Hemphilli** W. G. Binney.
1794 Variety **Mullani**: Idaho; Wash.
1798 Variety **Oregonensis**: eastern Oregon.
1806 **Polygyra germana**
1532 **Polygyra** (Triodopsis) **Mullani Olneyæ**
1020 **Polygyra harfordiana** J. G. Cooper.
1791 **Polygyra Mearnsii** Dall.
1790 **Polygyra pseudodonta** Dall.
1803 **Polygyra loricata**
1021 **Polygyra polygyrella** Bland.
1805 Variety **ptychophora**
1022 **Polygyra roperi Pilsbry.**
1799 **Polygyra Sanburni**
1712 **Polygyra rhyssa**
1950 **Polygyra miorhyssa**
1951 **Polygyra altissima** (See No. 2919).
1952 **Polygyra rhyssa hyporhyssa**
2000 **Polygyra Texasiana**
1804 **Polygyra Townsendiana**
1809 **Polygyrella Harfordiana**
1807 **Polygyrella polygyrella**
1808 Variety **montanensis** Ancey
1810 **Polygyrella Yatesii**
70 **Polynices uber**
3061 **Polypus bimaculatus**
3064 **Polypus Hongkongensis**
1023 **Pomatiopsis intermedia** Tryon.
1980 **Pomatiopsis Binneyi** Tryon.
2052 **Pomaulax turbanicus** Dall, Nautilus 23:134.
82 **Pomaulax undosus**
1024 **Pompholyx effusa** Lea.
1981 **Pomatiopsis Californica** Pils.
3078 **Poromya** (Dermatomya) **Tenuiconcha**
1025 **Potomides californica** Haldeman.
1026 **Potamides montagnei** Orbigny.
1787 **Praticolella Berlandieriana**
1788 **Praticolella griseola**
1027 **Pristiphora oblonga** Carpenter.
2883 Genus **Pristiloma** Ancey.
2918 **Pristiloma arctica**
2937 **Pristiloma Idahoensis**
1201 **Pristiloma lansingi** Bland.
2916 **Pristiloma Pilsbryi**
1202 **Pristiloma stearnsii** Bland.

2917 Pristiloma Taylori
1618 Genus Prophysaon
1028 Phophysaon andersoni J. G. Copper.
1525 Prophysaon Andersoni Hemphilli
1526 Variety pallidum Cockerell.
1578 Prohysaon Andersoni marmoratus Ckl.
1030 Prophysaon cæruleum Cockerill.
1880 Prophysaon fasciatum
1881 Prophysaon foliatum
1203 Prophysaon hemphilli Bland and Binney. . .
1940 Prophysaon humile
1029 Prophysaon pacificum Cockerill.
295 Psammobia rubroradiata Nutt
2903 Psammobia maximus Deshayes.
2904 Psammobia regularis Cpr.
2905 Psammobia Californicus Conrad. 1848.
2906 Psammobia fucatus Hinds.
2907 Psammobia edentulus Gabb.
3075 Psephidia cymata
2188 Psephidia Lordi
2189 Psephidia ovalis
371 Psephis lordi Baird. See 2188. 1165
1037 Psephis salmonea Carpenter.
372 Psephis tantilla Gould 1164
1151 Variety oregonensis Lea.
1151 Variety wahlamatensis Lea.
1038 Psephis tellimyalis Carpenter.
2702 Pteria sterna
144 Pteronotus festivus Hinds
1039 Pterorhytis foliatus Gmelin.
1040 Pterorhytis monoceros Sowerby.
1041 Pterorhytis nuttalli Conrad.
1989 Pteronotus carpenteri
1042 Pterorhytis trialatus Sowerby.
1043 Ptychatractus occidentalis
1924 Punctum californicum
1923 Punctum Clappi
1206 Punctum conspectum Bland. (See 912.)
1698 Punctum conspectum Pasadenæ
1207 Punctum minutissimum Lea.
1922 Punctum pygmæum
1358 Punctum randolphii Dall.
528 Puncturella galatea? major Dall.
1259 Puncturella cooperi Cpr.
1260 P. cucullata Gould.
1261 P. Galatea Gould.
1262 P. noachina L.
25 Pupa armifera Say
1591 Pupa (Pupilla) blandi Morse.
1651 Pupa blandi edentata
1487 Pupa californica Rowell.
1488 Variety elongata. San Clemente Island.
1489 Variety catalinaria. Santa Catalina Island.
1490 Variety trinotata. Monterey, Cal.
1491 Variety Diegœnsis. San Diego, Cal.
1492 Variety cyclops. Rocklin, Placer, Co., Cal.
1495 Pupa clementina Sterki.
27 Pupa contracta
1211 Pupa corpulenta Morse.
1493 Pupa Dalliana Sterki.

1653 Pupa decora Gould.
1599 Pupa (Columella) edentula alticola Ing.
3158 Pupa chordata Pfeiffer, 1856.
3159 Pupa Orcutti
3160 Pupa ovata (see Vertigo).
1836 Pupa calamitosa
1494 Pupa Hemphilli Sterki.
1598 Pupa (Leucochila) fallax Say.
26 Pupa fallax
1593 Pupa hebes Ancey.
1652 Pupa Holzingeri Sterki.
1521 Pupa hordeacea Gabb.
1522 Pupa hordeacella Pilsbry.
1590 Pupa (Pupilla) muscorum L.
1829 Pupa Rowelli
1830 Pupa castanea Sterki.
1831 Pupa decora borealis: Bering Island.
1832 Pupa concinnula Ckll.
1833 Pupa coloradoensis Ckl..
1711 Pupa Gabbii mexicanorum
1985 Pupa (Pupilla) sonorana
1986 Variety Tenella Sterki, l. c. 129. N. M. (Ashmun).
1834 Pupa Hoppii Maell.
1835 Pupa columbiana Sterki.
24 Pupa pentodon Say
1592 Pupa (Pupilla) signata Mouss. Rocky Mts.
2213 Pupa calamitosa Pilsbry, Phila ac pr 1889 411, t 12, f
1212 Pupa simplex Gould.
1596 Pupa (Pupilla) Sterkiana
1595 Pupa (Pupilla) sterri Voith. (?Rocky Mts.)
1594 Pupa (Pupilla) sublubrica Anc. Rocky Mts.
1597 Pupa syngenes Pilsbry.
2584 Pupilla muscorum
2585 Pupilla Blandi
2413 Pupilla muscorum xerobia
2586 Pupilla syngenes dextroversa
1576 Pupilla corpulenta Morse.
2587 Pupoides marginatus
2588 Pupoides hordaceus
61 Purpura biserialis
479 Purpura canaliculata Duclos.
1234 Purpura crispata Chemnitz.
483 P. crispata septentrionales Reeve.
2105 Purpura hippocastanum L.
2331 Purpura floridana Conr.
1235 P. Lima Martyn.
150 Purpura saxicola Val
1563 Purpura saxicola ostrina Gld.
480 Purpura saxicola? emarginata Desh.
481 Variety Fuscata Forbes.
482 Variety Ostrina Gould.
2277 Purpura triserialis Blainv.
415 Purpura triserialis Blainville.
2061 Purpura foliata Mart.

Genus Pyramidella Lamarck

2746 Pyramidella Adamsi Cpr.
2774 P: Mexicana. Scammon Lagoon, Baja Cal.
2775 P: Mazatlanica. Cape Tepoca, Mexico.
2776 P: achates. "Santa Barbara, Cal."—Mazatlan.
1920 Pyramidula asteriscus

1955 Pyramidula Cockerelli
2018 Pyramidula elrodi
1917 Pyramidula perspectiva
1669 Pyramidula Randolphii
1918 Pyramidula striatella
1919 Variety **Cronkhitei**
1889 Pyramidula strigosa
1890-1916 Varieties or forms Binneyi, cooperi, multicostata, castanea, albofasciata, buttoni, gouldii, parma, jugalis, intersum, subcarinata, bicolor, lactea, picta, globulosa, trifasciata, confluens, elevata, major, minor, Iowensis (extinct), concentrata, Haydeni, Hemphilli, Gabbiana, Bruneri (oquirrhensis) and hybrida, have been described by Cockerell, Hemphill and others. See 1479 to 1485.
2046 Pyramidula strigosa concentrata
1886 Pyramidula solitaria
1887 Variety **occidentalis** v. Martens.
1888 Variety **limitaris** Dawson.
1967 Pyrgulopsis Nevadensis Stearns.
1160 Pythina rugifera Carpenter.
63 Ranella californica
2106 Ranella cruentata Sby.
2703 Rangia Le Contei Conr.
3161 Rhodea Californica Pfeiffer, 1846.
3162 Variety **Ramentosa** Cp. 1891.
1190 Rictaxis punctocœlata
1263 Rimula cucullata Gld. Is Puncturella c.
1264 Rimula galatea Gld. Is Puncturella g.
1044 Rissoa æquisculpta Carpenter.
1045 Rissoa castanea Moller.
1046 Rissoa compacta Carpenter.
396 Rissoa acutilirata Carpenter.
2716 Rissoa purpurea
1047 Rissoa? cooperi Tryon.
2044 Rissoa Kelseyi
1048 Rissoa? exilis Tryon.
1049 Rissoa filosa Carpenter.
2575 Rissoa (Alvania) Grippiana
1051 Rissoa purpurea Dall.
1852 R. (Alvania) reticulata Carpenter.
2037 Rissoina Bakeri
205 Rissoina interfossa Cpr
395 Rissoina purpurea Carpenter.
3080 Rochefortia compressa. Gulf of Cal.
2250 Rochefortia grippi Dall.
2495 Rostanga pulchra
484 Rupellaria lamellifera See 2186.
2908 Sanguinolaria tellinoides A. Ad.
2909 Sanguinolaria Hanleyi Bertin.
2910 Sanguinolaria Nuttallii Conrad.
107 Sanguinolaria nuttallii
280 Saxicava rugosa Linn
302 Saxidomus aratus Gld.
1053 Saxidomus brevisiphonatus Carpenter.
2162 Saxidomus giganteus
376 Saxidomus gracilis Gould
301 Saxidomus nuttallii Conr
1568 Saxicava arctica L.
356 Saxicava pholadis Linnaeus
1169 Saxidomus squalidus Deshayes.

1054 Scala bellastriata Carpenter.
1055 Scala crebricostata Carpenter.
2538 Scala Berryi
2539 Scala rectilaminata
2540 Scala (Cirostrema) Montereyensis
2533 Scala Lowei
2740 Scala Sawinæ 2465
1567 Scala Grœnlandica Perry.
1056 Scala cumingi Carpenter.
1057 Scala gracilis? Sowerby.
1058 Scala hindsii Carpenter.
1059 Scala indianorum Carpenter.
1060 Scala occidentalis Nyst.
1061 Scala retiporosa Cpr.
348 Scalaria gracilis
349 Scalaria subcoronata
190 Scalaria hindsii Cpr and var subcoronata
191 Scalaria indianorum Cpr
192 Scalaria bellastriata Cpr
350 Scalaria tincta
1585 Scaphella (Voluta) Arnheimi
1062 Scaphella stearnsii Dall.
2422 Schismope rimuloides Cpr.
283 Schizothaerus nuttallii Conr
604 Scissilabra dalli
2529 Scissurella (Schizotrochus) Kelseyi
1071 Scurria gigantea Gray.
2304 Scurria mesoluca Menke.
3715—Seila assimilata C. B. Ad.
565 Seila montereyensis
1577 Selenites sportella Gould.
1194 Selenites sportella Gould.
1063 Selenites vancouverensis Lea.
1072 Selenites simplicilabris Ancey.
1499 Selenites Vancouverensis Keepi
1500 Selenites Vancouverensis hybrida
104 Semele decisa
2326 Semele proxima C. B. Ad.
410 Semele pulchra Sowerby.
1178 Semele rubropicta Dall.
290 Semele rupium Sby.
473 Serpulorbis squamigerus Carpenter.
1342 Serridens oblonga Cpr.
1163 Serripes centifilosum Carpenter.
1064 Serripes greenlandicus Chemnitz.
1065 Serripes laperousi Lamarck.
128 Septifer bifurcatus
1073 Sigaretus concavus Lamarck.
183 Sigaretus debilis Gld
1941 Sigaretus Oldroydi Dall.
2008 Siliqua patula alta
2009 Siliqua media Gray.
2010 Siliqua Nuttallii Conrad.
278 Siliqua lucida Conr
1066 Siliqua patula Dixon.
1226 Sipho angustus E. A. Smith, ann mag nat hist, ser 5, 6:287.
156 Siphonalia kellettii Fbs
1067 Siphonaria brannani Stearns.
3165 Siphonaria lecanium Philippi, 1846.
2266 Siphonaria lecanium Cpr.

2741 Siphonaria vernalis
1074 Siphonaria thersites Carpenter.
3164 Siphonaria æquilirata Cpr., 1867.
2466 Sistrum carbonarium Sby.
1068 Skenea planorbis Fabricius.
1069 Solariella perambilis Carpenter.
1333 Solecardia eburnea Conrad.
363 Solecurtus californianus Conrad
364 Variety Subteres Conrad
100 Solen rosaceus
362 Solen sicarius Gould
1070 Styliferina turrita Carpenter.
1435 Solariella carlotta Dall.
1256 Solariella cidaris Cpr.
1257 Solariella varicosa Mighels and Adams.
2742 Solariella unda
563 Solariella oxybasis Dall. Off S. Barbara Isl., in 414 fms.
2082 Solariella triphostephanus
529 Solemya johnsoni Dall.
217 Solecurtus californianus Conr
2672 Solemya panamensis Dall.
2673 Solemya valvulus Cpr.
2674 Solemya Agassizii Dall.
2675 Solemya ventricosa Conr.

2964 Sonorella virilis
2965 Variety circumstriata
2966 Variety Huachucana
2967 S: Hachitana Ashmuni
2968 Variey Bowiensis. Bowie, Arizona.
2969 Variety Rowelli. (Helix Rowelli Newc.)
2970 S: Granulatissima parva. Arizona.
2971 Variety Latior
2659 Sonorella Indioensis
2660 Sonorella coloradoensis
2253 Sonorella argus
2042 Sonorella granulatissima
2482 Sonorella Lohrii lioderma
2484 Sonorella Ashmuni
2485 Sonorella Dalli
2486 Sonorella Baileyi
2487 Variety Orcutti Bartsch.
2488 Sonorella Fisheri Bartsch, l. c.
2421 Sonorella walcottiana
2381 Sonorella betheli
2661 Sonorella Hachitana
2662 Sonorella Nelsoni
2663 Sonorella Goldmani
2664 Sonorella Merrilli
2665 Sonorella Mearnsi
2666 Sonorella Magdalenensis
2667 Sonorella Lohrii
2668 Variety lioderma Pilsbry.
2669 Sonorella Arizonensis
2670 Sonorella Rowelli

1184 Sphænia californica Conr.
1183 Sphænia ovoidea Carpenter.
1689 Sphærium dentatum Hald.
2535 Sphærium Hendersoni

1690 Sphærium nobile Gould.
2132 Sphærium solidulum Prime.
2688 Sphærium Pilsbryanum
1075 Sphærium occidentale Prime.
1688 Sphærium primeanum Classen.
1167 Sphærium raymondi J. G. Cooper.
1166 Sphærium rhomboideum Say.
52 Sphaerium securis
54 Sphaerium similis
1076 Sphærium spokani Baird.
1077 Sphærium striatinum Lamarck.
53 Sphaerium sulcatum
1078 Sphærium sulcatum Lamarck.
1079 Sphærium tumidum Baird.
3102 Genus Sphyradium Charpentier.
3103 S: Hasta. Pleistocene, Kansas.
3104 S: alticolum. Utah, Colo., and Wyoming.
Synonymy:—Pupa and Pupilla alticola Ingersoll.
3105 S: Edentulum. Europe, Asia, etc.
1706 Sphyradium edentulum
437 Spiroglyphus lituella Morch.
1179 Spisula falcata Gould.
1639 Spisula (Hemimactra) catilliformis Conr. 1867.
1640 Spisula (Hemimactra) Hemphilli Dall. 1894.
1641 Spisula (Hemimactra) planulata Conr. 1837.
1642 Spisula (Hemimactra) polymyma Stm. 1860.
1643 Variety alaskana Dall. 1894.
1180 Spisula planulata Conrad.
1334 Sportella californica Dall, 1889. Monterey, Cal.
1335 Sportella stearnsii Dall, 1899. Gulf of Cal.
370 Standella falcata Gould
1569 Standella californica Conrad.
472 Standella planulata Conrad.
1080 Stenotrema germana Gould.
516 Strombella middendorfii Dall.
517 Strombella fragilis Dall.
518 Strombella melonis Dall.
2290 Strombus gracilior
1439 Subemarginula yatesii
1081 Succinea hawkinsii Baird.
1082 Succinea Nuttalliana Lea.
1924 Succinea Haydeni W. G. Binn.
1925 Succinea Grosvenorii Lea.
1926 Forma elongata: Kremmling, Colo.
1927 Forma rufescens Ckll. Lee Co., Texas.
1928 Succinea avara Say.
1929-1933 Forms alba Ckll. (Custer Co., Colo.); wardiana Lea; vermeta Say; compacta Ckll.; major Binn. have been described.
1934 Succinea oregonensis Gabbi.
1935 Succinea chysis Westerl.
1936 Variety aurelia Martens.
1937 Succinea annexa Westerl.
1084 Succinea lineata W. G. Binney.
32 Succinea obliqua
1083 Succinea oregonensis Lea.
2262 Succinea retusa Lea.
448 Succinea rusticana Gould.
1085 Succinea sillimani Bland.
1886 Succinea stretchiana Bland.

175 **Surcula carpenteriana** Gabb
1087 **Surcula perversa** Gabb.
1088 **Surcula tryoniana** Gabb.
2078 **Tachyrynchus lacteola**
2912 **Tagelus affinis** C. B. Adams.
101 **Tagelus Californicus**
2913 **Tagelus politus** Cpr.
2328 **Tagelus politus** Cpr.
2914 **Tagelus subteres** Conrad.
2911 **Tagelus violascens** Cpr.
1089 **Tapes grata** Say.
307 **Tapes laciniata** Cpr. See No. 2178.
1090 **Tapes laciniata** Carpenter.
120 **Tapes staminea**
306 **Tapes staminea diversa** Sby. See No. 2177.
375 **Tapes staminea orbella** Carpenter
1570 **Tapes staminea ruderata.** See No 2179.
305 **Tapes staminea tumida** Sby. See No. 2180.
374 **Tapes tenerrima** See 2182.
2401 **Tegula brunnea** Philippi.
2400 **Tegula funebrale** A. Ad.
2307 **Tegula globula** Cpr., dark variety.
2402 **Tegula montereyi** Kien.
2467 **Tegula peramabilis** Cpr.
2403 **Tegula pulligo Martyn.**
2699 **Tegula regina** (See No. 1605).
These are familiar as Chlorostoma, of older lists.
1475 **Teinostoma politum** Adams.
213 **Tellimya tumida** Cpr
296 **Tellina Bodegensis** Hds
2324 **Tellina cumingi** Hanley.
297 **Tellina Gouldii** Hanl
510 **Tellina idæ** Dall.
1091 **Tellina lamellata** Carpenter.
1092 **Tellina modesta** Carpenter.
1093 **Tellina pura** Gould.
108 **Tellina rubescens**
1094 **Tellina salmonea** Carpenter.
109 **Tellina variegata**
2325 **Tellinoides viridotincta** Cpr.
3051 **Terebra simplex** Cpr.
1095 **Terebra specillata** Hinds.
2268 **Terebra variegata** Gray.
1455 **Terebratalia Hemphilli** Dall.
546 **Terebratalia obsoleta** Dall.
548 **T. occidentalis** Dall.
547 **T. Transversa** Sowerby.
512 **Terebratella occidentalis obsoleta** Dall.
1142 **Terebratella transversa** Sowerby.
2468 **Terebratella obsoleta** Dall. See 512.
2469 **Terebratella occidentalis.** See 548.
2676 **Terebratula (Liothyris) sakhalinensis**
1143 **Terebratula californica** Koch.
541 **Terebratulina caput-serpentis** Linne.
Variety **unguicula** Davidson.
542 **Terebratulina kiiensis** Dall and Pilsbry.
1141 **Terebratulina unguicula** D'Orbigny.
1096 **Testacella maugeræ** Draparnaud.

Genus Tethys Linne.

2898
2032 **Tethys (Neaplysia) Ritteri**

2089 Thais emarginata
2087 Thais plicata
2088 Variety septentrionalis Reeve.
2327 Thracia plicata Desh.
1098 Thracia beringi Dall.
1097 Thracia curta Conrad.
285 Thracia curta Conr
286 Thracia plicata ? Desh
1811 Thysanophora Hornii
1812 Thysanophora Ingersolli
1813—Variety convexior Ancey.
116 Tivela crassatelloides
2139 Tivela planulata Sby. 1829.
2140 Tivella hians Phil. 1851.
2141 Tivela arguta Roemer. 1864.
2142 Tivela Byronensis Gray. 1838.
2143 Tivela Delesserti Deshayes. 1854.
2144 Tivela stultorum Mawe.
117 Tivela radiata
1270 Tonicella lineata Wood.
1271 Tonicella submarmorea Middendorf.
1272 Tonicella marmorea O. Fabricius.
2241 Tonites wascoensis
262 Tornatella punctocælata Cpr
456 Tornatina carinata Carpenter.
457 Tornatina cerealis Gould.
1099 Tornatina culcitella Gould.
263 Tornatina eximia Baird
1100 Tornatina harpa Dall.
1101 Tornatina inculta Gould.
1268 Trachydermon dentiens Gould.
1269 Trachydermon flectens Carpenter.
1650 Trachydermon Hartwegii
1649 Trachydermon (Cyanoplax) Raymondi
1703 Trachydermon Sharpii
2138 Transennella tantilla Gould. 1853.
1648 Tresus Nuttallii Conr. 1837. 1181
1002 Trichoptropis bicarinata Broderip.
1103 Trichotropis cancellata Hinds.
1243 Trichotropis inermis Hinds.
1473 Trichotropis? Kelseyi Dall.
590 Triphoris adamsi. Off Chatham Island.
1241 Triforis adversa Montagu.
2503 Triopha grandis
2502 Triopha maculata
587 Triphoris alternatus C. B. Adams. Panama.
577 Triphoris callipyrgus
578 Triphoris carpenteri
580 Triphoris catalinensis
589 Triphoris chathamensis. Chatham Island. . . . . .
585 Triphoris dalli. Panama.
583 Triphoris excolpus
588 Triphoris galapagensis. Galapagos Islands.
579 Triphoris hemphilli
586 Triphoris inconspicuus C. B. Adams. Panama.
575 Triphoris montereyensis
584 Triphoris panamensis. Panama.
576 Triphoris pedroanus
582 Triphoris peninsularis
581 Triphoris stearnsi

1104 **Triodopsis sanburni** W. G. Binney.
1105 **Triodopsis hemphilli** W. G. Binney.
1106 **Triodopsis mullani** Bland.
1107 **Triodopsis levettei** Bland.
1108 **Triodopsis harfordiana** W. G. Binney.
1109 **Triodopsis loricata** Gould.
2347 **Triton gibbosum**
2062 **Tritonalia lurida**
2063 **Tritonalia subangulata**
2047 **Tritonia Palmeri** Cooper
1110 **Tritonium oregonense** Redfield.
1111 **Tritonium pileare** Linne.
1381 **Tritonofusus hallii**
1382 **Tritonofusus** (Plicifusus) **brunneus** Dall.
1388 **Tritonofusus** (Plicifusus) **herendeeni** Dall.
3068 **Tritonifusus Jordani**
1463 **Tritonofusus** (**Plicifusus**) **Kelseyi** Dall.
1387 **Tritonofusus** (Plicifusus) **martensi** Krause.
1384 **Tritonofusus** (Plicifusus) **rectirostris** Carpenter.
1386 **Tritonofusus** (Plicifusus) **roseus** Dall.
1385 **Tritonofusus** (Plicifusus) **spitzbergensis** Reeve.
1873 **Tritonofusus** (Plicifusus) **virens** Dall.
2685 **Trivia Californiana** Gray 1828.
180 **Trivia californica** Gray
2289 **Trivia pacifica** Gray.
1112 **Trivia radians** Lamarck.
2423 **Trivia ritteri** Raymond.
1113 **Trivia sanguinea** Gray.
3049 **Trivia solandri** Gray. 181
344 **Trochiscus norrisii**
2300 **Trochita spirata** Forbes.
505 **Trophon cerrosensis** Dall. Cerros Island.
1233 **Trophon dallii** Kobelt.
527 **Trophon** (Boreotrophon) **disparilis** Dall.
1229 **Trophon multicostatus** Eschscholtz.
1230 **Trophon orpheus** Gould.
1424 **Trophon pinnatus** Dall.
526 **Trophon** (Boreotrophon) **scitulus** Dall.
1231 **Trophon stuarti** E. A. Smith.
1232 **Trophon tenuisculptus** Carpenter.
504 **Trophon triangulatus** Carpenter.
80 **Truncatella californica**
81 **Truncatella stimpsonii**
2030 **Truncatella Stimpsoni Guadalupensis**
3172 **Tryonia Exigua** Conrad, 1855.
1975 **Tryonia clathrata Stimpson**
2305 **Turbo squamigerus** Reeve.

Genus Turbonilla Risso.

2777 **T: Diegensis.** San Diego.
2778 **T: acra.** Catalina Island.
2779 **T: Gabbiana.** Monterey.
2780 **T: Æpynota.** Off San Martin I., Baja Cal.
2781 **T: Santarosana.** Santa Rosa I.
2782 **T: Kelseyi.** San Diego.
2783 **T: Raymondi.** Catalina Isl.
2784 **T: Carpenteri.** San Pedro.
2785 **T: asser.** Redondo.
2786 **T: attrita.** San Pedro.
2787 **T: Lowei.** San Pedro.

2788 T: **profundicola.** La Jolla.
2789 T: **Galianoi.** Cape San Lucas, Baja Cal.
2790 T: **humerosa.** Catalina I.
2791 T: **vexativa.** San Pedro.
2792 T: **Ridgwayi.** San Diego.
2793 T: **Halibrecta.** Catalina I.
2794 T: **Gouldi.** San Pedro.
2795 T: **Pedroana.** San Pedro.
2796 T: **Halia.** San Diego.
2797 T: **Painei.** Redondo.
2798 T: **Keepi.** Long Beach.
2799 T: **halistrepta.** Newport.
2800 T: **obesa.** Pacific Beach.
2801 T: **Nuttingi.** San Diego.
2802 T: **callia.** San Diego.
2803 T: **pluto.** San Pedro.
2804 T: **signæ.** San Pedro.
2805 T: **aragoni.** Monterey.
2806 T: **recta.** Point Abreojos, Baja Cal.
2807 T: **weldi.** Point Fermin.
2808 T: **nereia.** San Diego.
2809 T: **antestriata.** Esteros bay.
2810 T: **antemunda.** Santa Rosa Isl.
2811 T: **virgo.** Santa Barbara.
2812 T: **almo.** San Diego.
2813 T: **wickhami.** Catalina I.
2814 T: **adusta.** San Diego.
2815 T: **regina.** Santa Rosa I.
2816 T: **catalinensis.** Catalina I.
2817 T: **ambusta.** San Pedro.
2818 T: **pentalopha.** San Diego.
2819 T: **heterolopha.** San Diego.
2820 T: **periscelida.** Santa Rosa I.
2821 T: **laminata.** San Pedro.
2822 T: **arata.** Catalina I.
2823 T: **Swani.** San Pedro.
199 **Turbonilla aurantia** Cpr
1285 **Turbonilla** (Turbonilla) **gilli**
1286 Variety **Delmontensis**
1287 **T. (Chemnitzia?) montereyensis**
1288 **T.** (Chemnitzia) **muricatoides**
1289 **T.** (Strioturbonilla) **vancouverensis**
1290 **T.** (Strioturbonilla) **Stylina**
1291 **T.** (Strioturbonilla) **serræ**
1292 **Turbonilla taylori**
1293 **Turbonilla berryi**
1294 **Turbonilla lyalli**
1295 **Turbonilla victoriana**
1296 **Turbonilla valdezi**
1297 **Turbonilla newcombei**
1298 **Turbonilla oregonensis**
1299 **T.** (Pyrgiscus) **Canfieldi**
1300 **T.** (Pyrgiscus) **morchi**
1301 **T.** (Pyrgiscus) **Antestriata**
1302 **T.** (Pyrgiscus) **eucosmobasis**
1303 **T.** (Pyrgiscus) **tenuicula** Gould.
1304 **T.** (Pyrgiscus) **castanea**
1305 **T.** (Mormula) **Eschscholtzi**
1239 **Turbinella chocolata** Cpr.
1238 **Turbonilla** (Mormula) **lordi E. A. Smith**

198 Turbonilla torquata Gld
1237 Turbonilla (Mormula) tridentata Cpr.
2713 Turbonilla Gabbiana
2079 Turbonilla (Pyrgolampros) Alaskana
2570 Turbonilla (Pyrgiscus) castanella
2470 Turbonilla Lowei D. & B.
2471 Turbonilla Simpsoni D. & B.
2472 Turbonilla hypolispa D. &. B.
2473 Variety stylina Cpr.
2474 Turbonilla auricoma D. & B.
2475 Turbonilla aresta D. & B.
2476 Turbonilla tridentata catalinensis D. & B.
2477 Turbonilla latifunda D. & B.
2346 Turbonilla buttoni Dall & Bartsch.

562 Turcicula bairdii Dall. Off S. Clemente Isl., in 414 fms.
1458 Turris (Antiplanes) diaulax Dall.
1459 Turris (Surcula) ophioderma Dall.
1460 Turris (Surcula) rhines Dall.
1461 Turris (Surcula) halcyonis Dall.
439 Turritella cooperi Carpenter.
1114 Turritella jewetti Carpenter.
1354 Turtonia minuta Fabricius.
1355 Turtonia occidentalis Dall.
1115 Tylodina fungina Gabb.
1425 Typhis Martyria Dall.
56 Unio complanatus
57 Unio Heterodon
1668 Unio Oregonensis Lea.
1633 Urosalpinx cinereus
1605 Uvanilla regina
2306 Uvanilla unguis Mawe.
1938 Vaginulus olivacea
2897 Genus Vallonia Risso, 1826.
1672 Vallonia minuta Say.
1673 Vallonia excentrica Sterki.
1674 Vallonia albula Sterki.
1581 Vallonia costata Muller.
1786 Vallonia costata montana: Rocky Mts.
2261 Vallonia costata montana Sterki.
1116 Vallonia cyclophorella Ancey.
1656 Vallonia gracilicosta Reinh.
1675 Vallonia parvula Sterki.
1657 Vallonia perspectiva Sterki.
1117 Vallonia pulchella Muller.
2691 Valvata Calli
2692 Valvata Whitei
2693 Valvata Utahensis Call.
2581 Valvata humeralis Say. (See 2679.)
2679 Valvata humeralis californica
1118 Valvata sincera Say.
45 Valvata tricarinata
1119 Valvata virens Tryon.
3054 Varieties
2274 Vasum cestrum Brod.
1120 Velutina cryptospira Middendorf.
1121 Velutina lævigata Pennant.
1122 Velutina prolongata Carpenter.
2946 Venericardia Alaskana Dall.
380 Venericardia borealis ventricosa Gould

2942 Venericardia crassicostata Sby. 1825.
2943 V: (ventricosa var?) Gouldii Dall.
2946 Venericardia incisa Dall, 1902.
2945 Venericardia monilicosta Gabb? 1861.
2948 Venricardia prolongatus Cpr.
2095 Venericardia barbarensis
2096 Venericardia borealis
2201 Venericardia crassidens
2319 Venericardia crassicostata Sby.
2320 Venericardia cuvieri Brod.
2947 Venericardia rudis Gray.
2944 Venericardia Stearnsi Dall.
1157 Venericardia ventricosa Gould.
2187 Venerupis foliacea Desh.
2186 Venerupis lamellifera
1123 Venus kennerleyi Carpenter.
114 Venus fluctifraga
1451 Venus Kennicottii Dall.
351 Venus fordii
303 Venus (Chione) simillima Sby
115 Venus succincta
1124 Venus toreuma Gould.
1125 Vermetus compactus Carpenter.
1126 Vermetus squamigerus Carpenter.
345 Vermiculus fewkesi
3163 Veronicella olivacea Stearns, 1871.
347 Vertagus gemmatus
346 Vertagus lordii
1127 Verticordia acuticostata Philippi.
382 Verticordia ornata D'Orb
1838 Vertigo Binneyana Sterki.
30 Vertigo bollesiana
1709 Vertigo coloradensis
2582 Vertigo Coloradoensis Arizonensis
1837 Vertigo Dalliana (See 1493).
1839 Vertigo Gouldii Binn.
29 Vertigo milium
2923 Vertigo Gouldii lagganensis
2924 Vertigo Andrusiana
2928 Vertigo concinnula Cockerell.
2929 Vertigo modesta
2559 Vertigo occidentalis
2930 Variety Parietalis Ancey. Utah
2931 Variety Corpulenta Morse.
2932 Variety Castanea Sterki.
2933 Vertigo Columbiana Sterki.
2934 Variety Utahensis Sterki.
2935 Vertigo coloradoensis basidens. Bland, N. M. (Ashmun).
2936 Variety Arizonensis
28 Vertigo ovata
31 Vertigo simplex
3082 Vesicomya suavis. Gulf of Cal.
1654 Vitrea arborea Say.
1857 Vitrea Binneyana
1854 Vitrea cellaria
2558 Vitrea fagalis
1859 Vitrea Diegoensis Hemphill.
1855 Vitrea Draparnaldi
1853 Vitrina exilis: Unalaska.
1856 Vitrea Hammonis: N. C.—Colo. Palæarctic.

1860 Vitrea indentata
1676 Vitrea Johnsoni
2573 Vitrea lucida Drap. Colo.
1677 Vitrea pugetensis
1655 Vitrea radiatula Alder.
1861 Vitrea subrupicola
1862 Vitrea subrupicola spelæa
1678 Vitrea subrupicola
1679 Variety **spelea** Dall, Nautilus 9:27.
1858 Vitrea Whitneyi
2568 Vitrina Alaskana Dall.
5 Vitrina limpida
1128 Vitrifina pfeifferi Newcomb.
596 Vitrinella alaskensis
598 V. (Docomphala) **berryi**
595 Vitrinella eshnauri
594 Vitrinella oldroydi
597 V. (Docomphala) **Stearnsi**
2214 Vitrinella williamsoni Dall.
1129 Vivipara japonica Martyn.
2033 Vivipara malleata Reeve
166 Volutella pyriformis Cpr
1130 Volutharpa ampullacea Middendorf.
1224 Volutoharpa mœrchiana Fisher. See 1223.
2034 Volutomitra alaskana
1389 Volutopsius trophonius Dall.
1890 Volutopsius kobelti Dall.
1391 Volutopsius castaneus Mœrch.
1392 Volutopsius attenuatus Dall.
1393 Volutopsius regularis Dall.
167 Volvarina varia Sby
440 Volvula cylindrica Carpenter.
2478 Williamia peltoides Cpr.
2706 Williamia vernalis
1188 Xylophaga dorsalis
1189 Xylotrya bipinnata
1131 Xylotrya fimbriata Jeffries.
1132 Xylotrya pinnatifera Blainville.
353 Xylotrya setacea Tyron
1133 Xylotrya stutchburyi Jeffries.
1134 Yoldia amygdala Valenciennes.
318 Yoldia cooperi Gabb
1135 Yoldia impressa Conrad.
1136 Yoldia lanceolata Sowerby.
1137 Yoldia limatula Say.
1138 Yoldia sapotilla Gould.
1477 Yoldia (Scissula) ensifera plena Dall.
1614 Yoldia Montereyensis
1156 Yoldia seminuda Dall.
1139 Yoldia thraciæformis Storer.
2951 Genus Zacoleus Pilsbry.
2952 Zacoleus Idahoensis Pilsbry.
1438 Zeidora flabellum Dall.
99 Zirphaea crispata
2418 Zirfœa gabbi Tryon.
1571 Zonites cellarius Mull.
2884 Zonites selenitoides Pilsbry.
2743 Zonites Lansingii
2744 Zonites Stearnsii
2745 Zonites Shepardi

2555 Zonitoides alliaria Drap.
1864 Zonitoides arboreus
1866 Zonitoides selenitoides
1867 Zonitoides minusculus
1868 Zonitoides læviusculus
1869 Zonitoides milium pugetensis
2006 Zonitoides neomexicanus
1359 Zonitoides (Pseudahyalina) pugetensis
1956 Zonitoides Randolphi
1865 Zonitoides limatulus
2720 Zonitoides milium

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The known mollusca of San Bernardino Co., Cal. Nautilus 23:73.

2682 Buell, Ira M.:

Notes on fossil Californian Pleurotomidæ, Nautilus 24:142.

2399 Clark, Bruce L.:

The marine molluscan fauna from the vicinity of Bolinas bay, Cal. Nautilus 28:25-28.

2590 Cockerell, T. D. A.:

Snails of New Mexico and Arizona. Nautilus 19:67-71.

2036 Cockerell, T. D. A., and Mary Cooper:

Notes on Ashmunella. Nautilus 15:109-110.

2950 Cockerell, T. D. A.:

Variation in the snail-genus Ashmunella. Phila acad pr 1903: 615.

2542 Cockerell, T. D. A.

1523 Cockerell, Theodore D. A.:

The slugs of British Columbia, Nautilus 5:30.

1600 Cockerell, Theodore D. A.:

Notes on the North American species of Succinea. Nautilus 6:21-23. 29-31. 7:43-46.

3040 Cooper, J. G.:

On the natural history of the Farallon Islands. Zoe 3:151:—Mollusca.

2050 Cooper, James G.

A list of the writings on conchology and palæontology of the author, compiled by W. J. Ramond, appears in the Nautilus 17: 6-12.

3134 Cooper, J. G.:
Catalogue of the land and fresh-water mollusca of Lower California. Zoe 3:12-25.
605 Cooper, J. G.:
2110 Dall, William Healey:
Land shells of the genus Bulimulus in Lower California, with descriptions of several new species. U. S. Natl Mus pr 16:639-647 t 71-72. Mentions Nos. 2111-2123 as from Lower California.
2124 Dall, William Healey:
Report on the mollusks collected by the international boundary commission of the United States and Mexico, 1892-1894. U. S. Nat Mus pr 19:333-379 t 31-33.
2134 Dall, William Healey:
Synopsis of the family Veneridæ and of the North American recent species. U. S. Nat. Mus. pr 26:335-412 t 12-16.
3066 Dall, William Healey:
Diagnoses of new shells from the Pacific Ocean. U. S. nat mus pr 45:587-597.
2375 Dall, W. H.:
Notes on some West American Pectens. Nautilus 27:121.
3115 Dall, William Healey:
Synopsis of the Lucinacea and of the American species. U. S. natl mus pr 23:779-833, t 39-42.
2671 Dall, W. H.
A revision of the Solenomyacidæ. Nautilus 22:1-2.
2773 Dall, W. H. and Paul Bartsch:
A monograph of West American Pyramidellid mollusks. U S. Nat'l Mus b. 68. 1909.
2264 Dall, W. H.:
Shells collected at Manzanillo, West Mexico, Oct., 1910, by C. R. Orcutt, identified by William H. Dall. Nautilus 26:143.
2949 Dall, W. H.
Synopsis of the Carditacea and of the American species. Phila acad pr 1902:696-716. Above notes are taken from this paper.
2225 Dall, William Healey; An index to the Museum Boltenianum. Washington, 1915. 64 p.
2227 Dall, William Healey: A monograph of the molluscan fauna of the Orthaulax pugnax zone of the Oligocene of Tampa, Florida. U. S. Nat'l Mus. bull. 93. Wash. 1915. 173 p.
2229—Dall, William Healey: On some generic names first mentioned in the "Conchological Illustrations." U. S. Nat'l Mus. pr 48:437-440. Wash. 1915.
2191 Dall, William Healey:
Synopsis of the family Astartidæ, with a review of the American species. U. S. nat mus pr 26:933-951, t 62-63.
1284 Dall, William Healey: and Paul Bartsch
The Pyramidellid mollusks of the Oregonian faunal area. U. S. nat mus pr 33:491-534, t 44-48. Includes the following, numbers 1285-1327.
549 Dall, William Healey:
Scientific results of explorations by the U. S. fish com steamer Albatross. U. S. nat. mus. pr 12:219-362.
494 Dall, William Healey:
On some new or interesting West American shells obtained from the dredgings of the U. S. fish commission steamer Albatross in 1888, and from other sources. U. S. nat. mus. pr 14:173-191
533 Dall, William Healey:
The species named in No. 494 are further noticed by the same author in U. S. nat. mus. pr 17:675-733, t 23-32.
1357 Dall, William Healey:

Illustrations and descriptions of new, unfigured, or imperfectly known shells, chiefly American, in the U. S. national museum. U. S. nat mus pr 24:499-566, t 27-40.

1456 Dall, William Healey:

Descriptions of new species of mollusks from the Pacific coast of the United States, with notes on other mollusks from the same region. U S Nat Mus pr 34:245-257.

1332 Dall, William Healey:

Synopsis of the recent and tertiary Leptonacea of North America and the West Indies. U. S. nat mus pr. 21:873-897.

1573 Dore, Harry E.:

Mollusks in the Portland, Oregon, market. Nautilus 5:58.

1681 Drake, Mrs. Marie:

Marine shells of Puget Sound. Nautilus 9:38.

2255 Edson, Henry M.:

Notes on the validity of Helix (Epiphragmophora) oregonensis Lea. Nautilus 26:49.

2035 Elrod, Morten J.

Collecting shells in Montana. Nautilus 15:86-89, 103-104, 110-112, 129-130.

2049 Elrod, Morton J.

Montana shells—Pyramidula strigosa. Nautilus 17:1-6.

2415 Ferris, James H.:

Our N. M. expedition of 1914. Nautilus 28:109.

2479 Ferriss, James H.:

Southwestern shells. Nautilus 18:49.

2374 Ferriss, James H.:

Camps in the Catalinas and White Mts., of Arizona, with description of a new American land shell. See above.

2228 Frierson, L. S.: A new pearly freshwater mussel of the genus Hyria from Brazil. U. S. Nat'l Mus. pr 47:363, pl 12. Wash. 1914.

2028 Gifford, Edward W.

Epiphragmophora fidelis in central California. Nautilus 14: 114. At Point San Mateo, San Mateo Co., the occurrence of this species is noted.

2414 Hanham, A. W.

Notes on mollusks from British Columbia. Nautilus 28:87.

2263 Hanham, A. W.:

Notes on a few British Columbia marine shells. Nautilus 26: 133.

3101 Hanna, G. Dallas:

The American species of Sphyradium with an inquiry as to their generic relationships. U. S. natl mus pr 41:371-376, with figures.

2235 Hannibal, Harold: See Ralph Arnold.

3052 Hemphill, Henry:

A new species of Bullmulus. Zoe 4:395.

3056 Hemphill, Henry:

Note on a California Loligo. Zoe 3:51.

3048 Hemphill, Henry:

Notes on the animals of some West Coast shells. Zoe 3:350.

2237 Hemphill, Henry:

A collector's notes on variations in shells, with some new varities. Zoe 1:321-337, t 10.

Edible mollusks of western North America. Zoe 2:134-139.

Note on Helix yatesii Cooper. Zoe 2:45-47.

Studies among mollusks—instinct and genera. Zoe 2:312-318.

Notes on the animals of some west coast shells. Zoe 3:350-2.

Catalogue land, fresh water and marine shells of California and adjacent states. Leaflet (not seen).

Catalog of North American shells collected and for sale by. July 1890. 26 p.

Descriptions of some varieties of shells, with short notes on the geographical range and means of distribution of shells. San Diego soc. nat. hist. tr. 1:85-113 (1911).

1496 Hemphill, Henry:

New varieties of western land shells. Nautilus 4:41-43.

1501 Hemphill Henry:

New forms of western Limniades. Nautilus 4:25-27.

2025 Hemphill, Henry:

A contribution to West Coast Conchology. Nautilus 14:109-113, 121-125, 136-140.

2518 Hemphill, Henry:

A second contribution to West Coast conchology. Nautilus 19:5-8, 19-24.

1478 Hemphill, Henry:

New varieties of Patula strigosa. Nautilus 4:15.

2251 Henderson, Junius:

Oreohelix colonies in Colorado. Nautilus 25:133 26:9-11.

2230 Henderson, John B., and Paul Bartsch: Littoral marine

mollusks of Chincoteague Island, Virginia. U. S. Nat'l Mus. pr 47:411-421, pl 13-14. Wash. 1914.

2556 Henderson, Junius:

Mollusca of Colorado. Univ of Colo studies 4:— (F & Ap 1907).

2359 Henderson, Junius:

Some Wyoming shells. Nautilus 27:37.

1511 Keep, Josiah:

Mollusks of the San Francisco markets. Nautilus 4:97.

2534 Kelsey, F. W.

A healthy colony of Epiphragmophora tudiculata. Nautilus 20:61.

2005 Kelsey, F. W.

Dredging in San Diego bay. Nautilus 13:101.

2431 Lowe, H. N.:

A dredging trip to Santa Catalina Island, Nautilus 18:18.

2419 Lowe, Herbert N.:

Notes on the mollusk fauna of San Nicholas Island. Nautilus 17:66.

1993 Lowe, H. N.

Dredging off San Pedro, Cal. Nautilus 13:27. Gives an interesting list.

2335 Lowe, H. N.:

Shell collecting on the West Coast of Baja California. Nautilus 27:25.

2491 MacFarland, F. M.:

A preliminary account of the Dorididæ of Monterey bay, Cal. Wash biol soc pr 18:35-54 (2 F 1905).

1621 Monks, Sarah P.:

San Pedro as a collecting ground. Nautilus 7:74.

1699 Newcombe, C. F.

Some new or rare species of marine mollusca recently found in British Columbia. Nautilus 10:16-20.

60 Orcutt, Charles Russell:

Shells of Lagoon Head. Published in West American Mollusca,

138 Orcutt, Charles Russell:

Notes on the mollusks of the vicinity of San Diego, Cal., and Todos Santos bay, Lower California. With comments by W. H.

Dall. U. S. National Museum proceedings, 8:534—552, t 24.
1530 Pilsbry, Henry A.:
2591 Pilsbry, H. A.:
1999 Pilsbry, H. A.
Note on some New Mexican shells. Nautilus 13:79.
1997 Pilsbry, Henry A.
Mollusks collected by R. C. McGregor in northern California. Nautilus 13:64-67.
1508 Pilsbry, H. A.:
Notices of new Amnicolidæ. Nautilus 4:63.
2024 Pilsbry, H. A. and T. D. A. Cockerell:
Records of mollusca from New Mexico. Nautilus 14:85.
1945 Pilsbry, H. A. and E. G. Vannatta:
Revision of the North American Slugs: Binneya, Hemphillia, Hesperarion, Prophysaon and Anadenulus. Phila ac pr 1898: 219-261, t 9-16. Not seen.
1714 Pilsbry, Henry A.:
A classified catalogue of American land shells, with localities. Nautilus 11:45-48.
1964 Pilsbry, Henry A.:
Remarks on the American species of Conulus. Nautilus 12: 113. Describes the following form.
2899 Pilsbry, H. A. and E. G. Vanatta:
Revision of the N. A. slugs: Ariolimax and Aphallarion. Phila acad pr 1896:339. Describes Aphallarion as a new genus.
2901 Pilsbry and Vanatta:
Anatomical notes on certain West American Helices. P. & V. l. c. 1898:67.
Synopsis of the recent and tertiary Psammobiidæ of N. A. Phila acad pr 1898:57. Mentions the following species of West America.
2954 Pilsbry, H. A.:
Mollusca of the southwestern states. l. c. 211-290. An important contribution on the genera Holospira, Ashmunella, Sonorella and Oreohelix. The following are described.
2580 Pilsbry, H. A.:
Shells of Grant, Valencia Co., N. M. Nautilus 19-130.
2925 Pilsbry, H. A.
Note on the anatomy of the helicoid genus Ashmunella, l. c. 1900:107.
Lower Californian species of Cœlocentrum and Berendti, l. c. 550.
Sonorella, a new genus of helices, l. c. 556. S: hachitana type.
—and Edward G. Vanatta: A partial revision of the Pupidæ of the U. S. l. c. 582.
2361 Pilsbry, H. A.:
Note on a new variety of Epiphragmophora tudiculata. Nautilus 27:49.
2412 Pilsbry, H. A.:
Shells of Duran, N. M. Nautilus 28-37-38.
2543 Pilsbry, H. A. and J. H. Ferriss:
Notes on some New Mexican Ashmunellas. Nautilus 20:133-4. Notes on forms No. 2544-2548.
1992 Randolph, P. B.
Epiphragmorphora fidelis Gray. Nautilus 13:25.
1692 Randolph, P. B.
Shells of Seattle, King Co., Wash. Nautilus 9:101.
1963 Randolph, P. B.
Collecting shells in the Klondike country. Nautilus 12:109-112.

1619 Raymond, W. J.:
Why does Prophysaon shed its tail? Nautilus 4:6.
1624 Raymond, W. J.:
The California species of the genus Nuttallina. Nautilus 7: 133. Discusses distribution of N: Californica Nutt. and N: scabra Reeve.
2532 Raymond, William James:
West American species of Pleurotoma, subgenus Genota. Nautilus 20:37.
1687 Roper, Edward W.:
Notes on the Washington Sphæria and Pisidia, with descriptions of new species. Nautilus 9:97-99.

2578 Smith, Maxwell:
Annotated list of mollusca found in the vicinity of La Jolla, San Diego Co., Cal. Nautilus 21:55-59, 65-67.
1604 Stearns, Robert Edwards Carter:
Preliminary descriptions of new molluscan forms from West American regions, etc. Nautilus 6:85-89.
2015 Stearns, R. E. C.
Notes on the distribution of and certain characters in the Saxidomi of the West Coast. Nautilus 14:1.
1998 Stearns, Robert Edwards Carter:
Abalone fishery in California—protective regulation. Nautilus 13:81.
2020—Stearns, R. E. C.
Vallonia pulchella in Los Angeles, Cal., and elsewhere. Nautilus 14:65.
2107 Stearns, R. E. C.
Notes on recent collections of North American land, freshwater, and marine shells, received from the U. S. Department of Agriculture. U. S. Natl Mus pr 16:743-755. Mentions Nos. 2108-2109, from Ft. Huachuca, Arizona.
2099 Stearns, R. E. C.
Report on the mollusk-fauna of the Galapagos Islands with descriptions of new species. U. S. Nat. Mus. pr. 16:353-450 t 51-2.
On rare or little known mollusks from the west coast of North and South America, with descriptions of new species. l. c. 341-352, t 50.
2048 Stearns, Robert E. C.
Mollusks occurring in Southern California. Nautilus 16:133.
1328 Stearns, R. E. C.:
Description of a species of Actæon from the quaternary bluffs at Spanish Bight, San Diego, Cal. U. S. nat mus pr 21:297-299, f.
2090 Stearns, Robert Edwards Carter:
2549 Stearns, R. E. C.
Abalones and the earthquake. Nautilus 20:135.
3083 Stearns, R. E. C.:
Notes on Cytherea (Tivela) crassatelloides Conrad, with descriptions of many varieties. U. S. natl mus pr 21:371-377, t 23-25.
2541 Stearns, R. E. C. S.
Fossil mollusca from the John Day and Mascall beds of Oregon, Univ of Cal, Geol pub b 5:67-70. New species are Epiphragmophora dubiosa, Pyramidula Lecontei and Lymnæa maxima.
1589 Sterki, V.:
Preliminary list of North American Pupidæ (north of Mex-
1693 Sterki, V.
Small land mollusca from New Mexico. Nautilus 9:116.
1486 Sterki, V.

Notes on some North American Pupidæ with descriptions of new species. Nautilus 4:7-9, 18-18, 27-28.

1623 Taylor, George W.:

Notes on a collecting trip to Departure bay, Vancouver Island. Nautilus 7:100.

1622 Taylor, George W.:

Land and fresh water shells in the Rocky Mountains. Nautilus 7:85.

1140 Taylor, George W.:

Preliminary catalogue of the marine mollusca of the Pacific coast of Canada with notes upon their distribution. Royal soc of Canada, transactions, ser 2, 1:17-100. 1895.

1574 Taylor, G. W.:

Land shells of Vancouver Island. Nautilus 5:91.

59 Tracy, Charles Oliver

List of land and fresh water shells, collected in Windsor Co., Vermont.

2678 Trask, Dr. John B.

Dr. R. E. C. Stearns, Science 21 Ag 1908, gave a sketch of this pioneer in West America. Helix Traskii and others commemorate his labors.

2536 Whiteaves, J. F.

Notes on some land and fresh water shells from British Columbia. Ottawa Naturalist 20:115-119.

2725 Vanatta, E. G.:

2517 Whiteaves, J. F.:

Notes on some fresh-water shells from the Yukon territory. Nautilus 19:1.

1613 Williamson, M. Burton:

Edible mollusks of southern California. Nautilus 7:27.

2016—Williamson, Mrs. M. Burton:

Æstivation of Epiphragmophora Traskii in Southern California. Nautilus 14:13.

2510 Williamson, Mrs. M. Burton:

Some West American shells. So Cal acad sci b 4:118, describes 3 forms as new (numbers 2511-2513).

2521 Williamson, Mrs. M. Burton:

New varieties of Crepidula rugosa Nutt. found on Natica and on Norrisia. Nautilus 19:50. Names the next two forms.

1620 Wood, Williard M.:

On a collecting trip to Monterey bay. Nautilus 7:70.

1533 Wood, Williard M.:

and William T. Raymond:—Mollusks of San Francisco Coun-

334 Yates, Lorenzo Gordin

The mollusca of Santa Barbara county, Cal. Santa Barbara society of natural history bulletin 1:37-45.

New shells from the Santa Barbara channel. Same, pages 46-48, t 1 and 2.

1506 Yates, Lorenzo Gordin:

A new variety of Helix carpenteri from southern California. Nautilus 4:51.

1507 Variety Indioensis

SUPPLEMENT.
(Not Indexed.)

3173 Cooper, J. G.:
On land and fresh water shells of Lower California. Cal ac pr, ser 2, 3:99-103, 207-217, 338-344, t 13-14. (The word "mollusca" is substituted for "shells" in the last two parts. The following species are added to the Zoe list above reprinted.

1003 Planorbis anitensis Cp.
1009 Planorbis peninsularis Cp.
1011 Planorbis tumens Cpr.
1010 Planorbis subcrenatus Cpr.
3174 Bulimulus inscendens Beldingi
San Jose del Cabo (L. Belding).
3175 Bulimulus sufflatus insularis
Espirtu Santo Island (Bryant).
3176 Columna ramentosa
Rhodea californica var. ramentosa of Cooper's earlier paper.
3177 Columna ramentosa abbreviata
Type locality:—Sierra Laguna, Baja Cal.
3178 Helix areolata exanimata
3179 Hyalina indentata
Sierra Laguna, Baja Cal. (Eisen). Sonora, Mexico.
3180 Succinea rusticana Gould.
Sierra Laguna, Baja Cal. (Eisen).
3181 Melaniella? Eiseniana
3182 Helicodiscus lineatus sonorensis
Type locality:—San Miguel, Sonora. Cooper, l. c. 343, t 14, f 10.

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3183 Dunn, George W.:
Coleoptera and mollusca of the ocean beach at San Francisco. Zoe 2:310.
Siliqua patula, Cardium corbis, Mytilus Californicus, and Schizothærus Nuttalli, are the only species of mollusks named, these "usually old and broken valves."

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3184 Cooper, J. G.:
Fresh-water mollusca of San Francisco county. Zoe 1:197. Mentions 15 species as follows.

3185 Limnophysa Gabbi
3186 Variety **Adelinæ** Tryon.
3187 Limnophysa obrussa
3188 Anodonta nuttalliana wahlamatensis
3189 Calyculina
Synonymy:—Primella Cooper (see Sphærium).

3190 Dall, William Healey:
Synopsis of the family Tellinidæ and of the North American species. U. S. natl mus pr 23:285-326, t 2-4. The following are the West Coast species of our region, cited in above paper.

3191 Tellina cumingii Hanley, 1844.
Baja Cal. to Panama.
3192 Tellina (Macaliopsis) lyra Hanley, 1844.
Baja Cal. to Peru.
3193 Tellina (Merisca) reclusa Dall, 1900.
San Ignacio lagoon, Baja Cal., and Gulf of Cal.

3194 Tellina (Merisca) declivis Sowerby, 1868.
Cerros Island, Baja Cal., to Gulf of Cal.
3195 Tellina (Merisca) crystallina Wood, 1815.
Lower California to Panama.
3196 Tellina (Phyllodina) pristiphora Dall, 1900.
Near La Paz, Baja Cal., in 26 fms.
3197 Tellina (Scrobiculina) viridotincta Cpr. 1855.
Baja Cal. to Panama.
3198 Tellina (Scrobiculina) ochracea Cpr. 1864.
Cape San Lucas, and Gulf of Cal.
3199 Tellina (Tellinides) broderipii Deshayes 1857.
Gulf of Cal.—Cape San Lucas.—Panama.
3200 Tellina (Moerella) meropsis Dall, 1900.
Synonymy:—T: Gouldii Cpr. non Hanley.
3201 Tellina (Moerella) paziana Dall, 1900.
La Paz, Baja Cal.
3202 Tellina (Moerella) amianta Dall, 1900.
Gulf of Cal.
3203 Tellina (Angulus) macneilii Dall, 1900.
Gulf of Cal.—Guaymas, Son.
3204 Tellina (Angulus) suffusus Dall, 1900.
Gulf of Cal.—Guaymas, Son.
3205 Tellina (Angulus) carpenteri Dall, 1900.
Straits of Fuca to Baja Cal.
Synonymy:—Angulus variegatus Cpr. 1864, non Gmelin, 1792.
3206 Tellina (Angulus) cerrosiana Dall, 1900.
Cerros Island, Baja Cal.—Gulf of Cal. in 8-26 fms.
3207 Tellina recurva. Gulf of Cal.
3208 Tellina (Scissula) virgo Hanley, 1844.
Gulf of Cal.—Peru.
3208 Tellina (Ouardia) buttoni Dall, 1900.
Lituya bay, Alaska, to Gulf of Cal.
Synonymy:—Tellina var. obtusus Cpr. 1864, non Sby., 1818.
3210 Tellina (Peronidia) lutea Gray, 1828.
Bering Sea.—Japan.—Aleutians.
3211 Tellina (Peronidia) santarosæ Dall, 1900.
Santa Rosa Island, Cal., and other Cal. islands.
3212 Strigilla fucata Gould, 1851.
3213 S: sincera Hanley, 1844. Cape San Lucas to Panama.
3214 Strigilla cicercula Phil. 1846. Gulf of Cal. to Panama.
3215 S: lenticula Phil. 1846. Cape San Lucas to Central America.
3216 Tellidora burneti. Baja Cal. to S. A.
3217 Metis alta
Synonymy:—Scrobicularia biangulata Cpr.—Lutricola alta Cpr. Santa Barbara, Cal., to Baja Cal.
3218 Macoma middendorffii
Synonymy:—M: edentula Midd. non Brod. & Sby. Alaska, etc.
3219 Macoma incongrua
Bering Strait to Japan and Puget Sound.
3220 M: krausei. Aleutians, etc.
3221 M: edentula Brod. & Sby. Alaska, etc.
3222 M: calcarea Gmel. Arctic ocean, Oregon, etc.
3223 M: sitkana. Alaska.
3224 M: leptonoidea Dall, 1895.
Santa Barbara channel, Cal.—Matagorda bay, Texas.
3225 M: liotricha Dall, 1897.
Aleutian Islands to Puget Sound.
A thin oval shell, with glossy yellow periostracum.

3226 M: balthica L. 1758.
Arctic seas.—Japan.—Monterey, Cal.
3227 Macoma alaskana Dall, 1900. t
3228 M: undulata. Gulf of Cal. to S. A.
3229 M: indentata tenuirostris Dall, 1900.
San Pedro, Cal. and Santa Barbara Islands.
3230 M: elongata Hanley, 1844.
Baja Cal. to Panama, in 14-30 fms.
3231 M: aurora. Gulf of Cal.—Panama.

3232 Bartsch, Paul:
West American mollusks of the genus Cingula. U. S. natl mus pr 41:485-488 t 41.
3233 Cingula martyni. Alaska.
3234 Variety **Scipio.** Alaska.
3235 Cingula alaskana. Alaska.
3236 Cingula aleutica. Alaska.
Synonymy:—Onoba aleutica Dall.
3237 Cingula katherinæ. Alaska.
Named in honor of Mrs. Kate Stephens, the discoverer.
3238 Cingula montereyensis. Monterey, Cal.
3239 Nodulus cerinellus
3240 Nodulus asser
3241 Nodulus kelseyi
Type locality:—Coronado Islands, Baja Cal.
3242 Nodulus kyskensis
Bartsch, U. S. natl mus pr 41:289-291 describes the above, all from Alaska, except as noted.
3243 Bartsch, Paul:
Recent and fossil mollusks of the genus Alvania from the West Coast of America. l. c. 333-362, t 29-32. List follows.
3244 Alvania castanella. Alaska.
3245 Alvania aurivillii. Alaska.
3246 Alvania cosmia. San Pedro, Cal.—Baja Cal.
3247 Alvania albolirata. Cape San Lucas.
Synonymy:—Rissoa albolirata Cpr.
3248 Alvania lirata. Gulf of Cal.
Synonymy:—?Rissoa lirata Cpr.
3249 Alvania trachisma. Monterey, Cal.
3250 Alvania californica. Monterey, Cal.
3251 Alvania carpenteri. Neah bay, Wash.
Synonymy:—Rissoa carpenteri Weinkauff.—Alvania reticulata Cpr. not Montagu, 1808.
3252 Alvania perdroana. San Pedro, Cal.
3253 A: almo. Santa Barbara Islands, Cal.
3254 A: alaskana, Alaska.
3255 A: montereyensis. Monterey, Cal.—Alaska.
3256 A: excurvata. Mazatlan.
3257 A: electrina Cpr. Cape San Lucas.
3258 A: rosana. Santa Rosa Island, Cal.
3259 A: fossilis. San Pedro, Cal. (fossil).
3260 A: iliullukensis. Alaska.
3261 A: purpurea. Monterey, Cal.—Baja Cal.
3262 A: acutilirata. Monterey, Cal.—Baja Cal.
3263 A: Æquisculpta Keep.
Synonymy:—Risoa grippiana Dall.
Type locality:—San Diego, Cal.
Range:—Santa Barbara Island, Cal., to Todos Santos bay, Baja Cal.
3264 A: Oldroydæ. San Pedro, Cal.

3265 A: tumida Cpr. Cape San Lucas.
3266 Tritonia tetraquetra Pallas.
Unalashka (see Am. Nat. 14:431).
3267 Bergh, R.:
On the Nudibranchiate gasteropod mollusca of the north Pacific ocean with special reference to those of Alaska. Pt. I, pl. 1-8. Phila ac pr 1879, 71-132. Not seen (devoted almost wholly to anatomy).
3268 Arionta rowellii
3269 Arionta facta
W. G. Binney, Phila ac pr 1879, 16, mentions the two last named species with Binneya notabilis, as found on Guadalupe Island, off Baja Cal.
3270 Whiteaves, J. F.:
On some marine invertebrates from the West Coast of North America. Canadian naturalist, 8: No. 8, describes
3271 Cardium Richardsonii
3272 Yates, L. G.:
Notes on aboriginal money of California. Amer. Nat. 11:30-32, f 2-3.
Mentions Dentalium, Saxidomus aratus, Olivella biplicata, Haliotis, etc., as used. See also R. E. C. Stearns, Am Nat 11:344, and 473.
3273 Stearns, R. E. C.:
Shell money. Am Nat 3:1.
The Haliotis or Pearly ear-shell. Am Nat 3:250.
The Californian Trivia and some points in its distribution. Amer Nat 6:732, f.
The Teredo, or ship-worm. Am Nat 20:131, ill.
3274 Wright, Charles:
About shells. Am Nat 2:617.
3275 Dall, W. H.:
Notes on the Argonaut. Am Nat 3:236.
Pearls and pearl fisheries. l. c. 17:579.
Intelligence in a snail. l. c. 15:976. This records a curious instance of a pet snail that learned to distinguish its young mistress' voice from that others.
3276 Call, R. Ellsworth, and C. E. Beecher:
Notes on a Nevada shell (Pyrgula nevadensis). Am Nat 18:851.
Mentions occurrence in Pyramid lake, Nevada, in countless thousands, associated with Pompholyx effusa Lea, and Physa humerosa Gld. Gives dentition, etc., and places this shell in the Rissoidæ, between Paludestrina and Tryonia.
3277 Lockwood, S.:
Mussel climbing. Am Nat 4:321.
A sketch which we would like to reprint, if this work was not exceeding its limits.
3278 Bartsch, Paul:
The recent and fossil mollusks of the genus Rissoina from the West coast of America. U. S. Nat Mus pr 49:33-62, t 28-33.
Describes the following species as occurring within our area (Nos. 3279-3301).
3279 Risoina firmata C. B. Adams sub Rissoa. Panama.
Rissoa scalariformis C. B. Adams, is also cited as a synonym. Cape San Lucas and Gulf of California.
3280 Rissoina excolpa. Gulf of Cal.
3281 Rissoina stricta Menke. Gulf of Cal.
3282 Rissoina favilla. Cape San Lucas.
3283 Rissoina mazatlanica. Gulf of Cal.

3284 Rissoina expansa Cpr. Mazatlan.
3285 Rissoina peninsularis. Cape San Lucas.
3286 Rissoina townsendi. Agut Verde bay, Baja Cal.
3287 Rissoina barthelowi. Conception bay, Baja Cal.
3288 Rissoina kelseyi.
Rissoa kelseyi Dall & Bartsch, and Alaba oldroydi Dall are synonyms.
3289 Rissoina lapazana. La Paz, Baja Cal.
3290 Rissoina histia. Off La Paz, Baja Cal.
3291 Rissoina burragei. Gulf of Cal.
3292 Rissoina nereina. Point Abreojos, Baja Cal.
3293 Rissoina pleistocena. San Diego, Cal. (Pleistocene).
3294 Rissoina californica
Off South Coronado Isl., Baja Cal., in 3 fms. Catalina Isl., Cal.
3295 Rissoina mexicana. Mazatlan.—Gulf of Cal.
3296 Rissoina bakeri. San Pedro, Cal.
3297 Rissoina newcombei Dall. Vancouver Island.
3298 Rissoina cleo. Off South Coronado Isl., in 3 fms.
3299 Rissoina cerrosensis. Off Cerros Island, Baja Cal.
3300 Rissoina dalli. San Pedro, Cal.
3301 Rissoina coronadoensis. Off Coronado Islands.
Type localities are named after above species.

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MOLLUSCAN WORLD

1 Helix albolabris

This is the first snail that the writer remembers finding, when a boy on his father's Green Mountain farm, in Hartland, Vermont. Its generic name signifies a coil, while its specific name, from the Latin albo (white) and labris (lip), describes the chief character of the shell. This species is too well known to need further description in this place, and is given the place of honor in this work, as the present volume is designed as a list of species personally collected by the editor, and as a list of West American Mollusca in general.

2 Helix sayi

It was a proud boy who returned one day from the woods back of the old farm house with a specimen of this beautiful snail—and it was a sorry chap when its escape from its new home was discovered. It was finally recaptured, and its shell now rests in a tray in my cabinet. It was named for the eminent naturalist, Thomas Say. The generic name Helix is not now used for these snails, but it is hardly necessary to quote the list of synonyms here. The specific name also will have to be discarded, if the strict laws of priority were followed.

3 Helix dentifera

This is one of the rarest species in Hartland, Vermont, only one specimen being found by my brother, John H. Orcutt; several specimens from this locality are in my cabinet that were collected by C. O. Tracy.

4 Helix palliata

Rare in Hartland, Vermont, but more abundant in some of the more western states, ranging from Canada to Georgia and Louisiana.

5 Vitrina limpida

Hartland, Vermont; rare.

6 Hyalina arborea

Hartland, Vermont; abundant. Occurs from Labrador to Texas and New Mexico, and from Florida to California.

Shell umbilicated, depressed, very slightly convex, thin, pellucid; epidermis amber-colored, smooth, shining; whorls 4-5, with very minute, oblique striae, apparent when viewed with a microscope; aperture transversely rounded, peristome thin, acute; umbilical region indented; umbilicus moderate, well developed, round and deep; greater diameter 5, lesser 4 mm, height nearly 3.

This minute species I have detected near Julian, San Diego county, Cal., as well as in New England.

7 Hyalina indentata

Canada to Florida, Texas, Utah; Hartland, Vermont, rare.

Resembles H: arboreus, but is distinguished by its distant impressed lines, by the enlargement of the last whorl, and no umbilicus.

8 Hyalina lineata

Shell widely umbilicated, discoidal; epidermis greenish; whorls about 4 visible on the base of the shell as well as above,

with numerous equidistant, parallel, raised lines revolving upon them; suture much impressed; aperture remote from axis, semilunate, narrow, not expanding; peristome acute, thin; umbilicus wide, forming a concave depression of the base, each volution visible to the apex; within the aperture, on the external circumference, are placed from 1 to 3 pairs of minute, conical, white teeth, the first pair in sight when looking into the aperture, the others more remote: greater diameter 3.5, lesser 3, hight 1.5 mm.

Hartland, Vermont, common. Oakland, Cal., Idaho, New Mexico, Texas. Now placed in the genus Helicodiscus.

9 Hyalina minuscula

Shell umbilicated, minute, depressed-convex; epidermis whitish; whorls 4, convex, not increasing rapidly in diameter, with microscopic wrinkles; suture very distinctly impressed; aperture nearly circular; peristome thin, acute; umbilicus large, not spread, deep, and exhibiting the volutions; base rounded, columella with a thin callus; greater diameter 2.5, lesser 2.3, height 1 mm.

Hartland, Vermont, rare. This has a wide range, south to Yucatan, Mexico, Florida, Texas, Arizona, California, Japan, Cuba, and Porto Rico.

10 Hyalina exigua

Shell broadly umbilicated, depressed, pellucid, greenish horn color, marked with delicate revolving lines, and distant longitudinal ribs obliquely decussating the incremental striae; spire scarcely elevated, apex free from striae; whorls 3.5, convex, the last rounded, widely umbilicated below; aperture oblique, transversely rounded, remote from axis; peristome simple, acute, its columellar extremity not reflected; greater diameter 2.5, height 0.5 mm.

Hartland, Vermont, rare. Canada, New York, Michigan.

11 Hyalina viridula

Shell umbilicated, depressed, thin, fragile; epidermis pale, or brownish horn color, wrinkled, shining; whorls 4, the last rapidly enlarging toward the aperture; aperture transversely rounded; peristome simple, its edge rather thickened, not acute; umbilicus small, but well marked and constant; greater diameter 5, lesser 4.6, height 2 mm.

Hartland, Vermont, common; a circumpolar species common to three continents, reported from Portland, Oregon, Utah, Arizona, New Mexico, and the shores of the Gulf of Mexico.

12 Hyalina fulva

Shell imperforate, subconical thin, pellucid; epidermis smooth, shining, minutely striated, amber-colored; whorls 5 or 6, rounded, very narrow; suture distinct and deep; aperture transverse, narrow; peristome simple, acute; base convex; umbilical region indented, umbilicus closed; greater diameter 4, lesser 3.5, height 3 mm.

Hartland, Vermont, rare; a circumpolar species common to three continents. Sitka, Alaska; Lake Tahoe; San Gorgonio Pass, Riverside Co., Cal.; Nevada; Texas; Florida.

13 Hyalina multidentata

Depressed, thin, yellowish horn-color, smooth, shining, pellucid; whorls 6, slowly increasing, suture impressed; aperture transverse, narrow, lip extending to the perforated axis, base convex,

thickened within the aperture thru which may be seen 2 to 4 rows of 5 or 6 teeth each, radiating from the axis towards the circumference, upon the base of the outer whorl; teeth situated far within, and last row not usually visible from the aperture; diameter 3, height 1.5 mm.

Hartland, Vermont, rare. Maine; New York; Ohio.

14 Macrocyclis concava

Diameter 12 to 15 mm, whorls 5, superior part of last one flattened towards the mouth, well rounded beneath; light horn color or greenish, but almost white; slightly striate, suture well impressed, umbilicus rather wide and deep.

Hartland, Vermont, rare. Maine, Iowa, Georgia, Mississippi.

15 Helix alternata

Hartland, Vermont, common. Also the carinated form.

16 Helix striatella

Hartland, Vermont, abundant. Widely distributed.

Diameter 5, height 2.5 mm; depressed convex, nearly discoidal; whorls less than 4, with delicate oblique striae; suture distinct; aperture rounded, transverse; umbilicus very large, shallow; light horn color.

17 Helix asteriscus

Diameter 1.5, height .75 mm; elevated, planorboid; whorls 4, very convex; suture deep; surface with 25-30 very oblique, thin, raised ribs, between which it is finely striate; umbilicus moderately large, showing all the volutions; color light brown.

Hartland, Vermont, very rare; Maine; Massachusetts; Tacoma, Washington.

18 Helix labyrinthica

Hartland, Vermont, abundant. Texas; Arkansas.

19 Helix monodon

Hartland, Vermont, abundant. Canada; Texas.

20 Helix tridentata

Hartland, Vermont, rare. Canada, south thru eastern U. S.

21 Helix albolabris rosa

Hartland, Vermont (C. O. Tracy). A beautiful color form.

22 Helix pulchella

Shell widely umbilicated, depressed, slightly convex above, thin, transparent; epidermis colorless; whorls 4, very minutely striated, the last large and spreading at aperture like a trumpet; aperture orbicular, a little dilated; peristome much thickened, white, reflected, making nearly a continuous circle, ends approaching; umbilicus large, exhibiting all the volutions; greater diameter 3, lesser 2.5, height 1.5 mm.

Hartland, Vermont, rare. A circumpolar species, common to the three continents. Los Angeles, Cal. (R. E. C. Stearns).

23 Cionella subcylindrica

Shell oblong-oval, thin, polished, transparent; whorls 6, slightly convex, apex obtuse, sutures well marked; aperture oval, longitudinal, lip thickened but not reflected; umbilicus impervious; color bright amber; length 7.5, diameter 2.5 mm.

Hartland, Vermont, rare. Canada, to the mountains of South Carolina; Alaska, to Berkeley, Cal.

This appears in literature under the generic names of Bulimus, Zua, Ferussacia, Helix, Achatina, and Cochlicopa—the last the name now accepted.

24 Pupa pentodon Say
Hartland, Vermont, common. Georgia; Missisippi; Montana.

25 Pupa armifera Say
Hartland, Vermont, rare. All eastern U. S., Montana.

26 Pupa fallax
Hartland, Vermont, rare. South Carolina; Nebraska; Texas.

27 Pupa contracta
Hartland, Vermont, common. All eastern U. S.

28 Vertigo ovata
Ovate conical, ventricose, apex conical, whorls 5, very convex, with deep suture; aperture half round, truncate above, lip incurved within and reflected, marked externally by a groove, outer lip incurved in the middle; teeth 6-8, a large sharp one and a small one on the parietal wall, 2 on the columellar margin, one of them at its base, and 2 on the labrum, one of which is also basal; umbilicus open; color dark amber, shining; length 1.8, diameter 1 mm.

Hartland, Vermont, common. All America. Found by the writer in the Cantillas canyon, Baja California.

29 Vertigo milium
Hartland, Vermont, common. Texas.

30 Vertigo bollesiana
Hartland, Vermont, rare. Virginia.

31 Vertigo simplex
Hartland, Vermont, rare. Canada.

32 Succinea obliqua
Hartland, Vermont, common. Georgia; Arkansas.

33 Physa ancillaria
Connecticut river, Hartland, Vermont, abundant. Louisiana.

34 Physa heterostropha
Hartland, Vermont, abundant. All North America.

35 Bulinus hypnorum
Slender, translucent, highly polished; whorls 5-7; apex apparently acute, but when closely examined, found to be convex; aperture narrow, obtusely rounded anteriorly, acute posteriorly; lip scarcely apparent; columellar fold very slight; color ochre-yellow or light yellowish-brown, sometimes presenting violet and green prismatic reflexions; length 13, diameter 6 mm.

Abundant in a stagnant pond, often dry, in the woods on my father's farm, Hartland, Vermont. Common to Europe, Asia, and the northern portion of North America. Alaska to Utah.

This is one of the species that is a puzzle to systemists, having been given various generic names, for instance Bulla, Physa,

Aplexa, Aplexus, and lastly Aplexia.

36 Planorbis campanulatus
Hartland, Vermont, rare.

37 Planorbis bicarinatus
Abundant, Hartland, Vermont.

38 Planorbis exacutus
Rare, Hartland, Vermont.

39 Planorbis Lentus
Rare, Hartland, Vermont.

40 Planorbis parvus
Diameter 5 mm; shell compressed, minutely striate, smooth, flat above, with center impressed; left side with a broad, shallow concavity; whorls 4, a great part of them, with the apex visible to the center, on both sides; sutures equally deep; aperture oval, oblique, longer than wide, peritreme undeviating; color light brown, sometimes with a greenish tinge.
Hartland, Vermont, rare. Cantilles canyon, Baja California, on Chara, and other aquatic plants, abundant. Widely distributed.

41 Limnaea palustris
Shell of moderate size, spire well elevated, whorls moderately inflated, subperforate, aperture somewhat narrowly auriculiform, columellar fold well developed; color variable from light to dark brown.
Hartland, Vermont, common; Tracy cites a black form as rare. Widely distributed.

42 Limnaea desidiosa
Hartland, Vermont, rare. West to Kansas.

43 Limnaea caperata
Shell suboval, a little oblong, obscurely yellowish horn color; spire half as long as mouth; apex acute; whorls slightly wrinkled across, and with very numerous, equal, subequidistant, elevated, minute, revolving lines; suture not very deeply impressed; aperture rather dilated; lip fold not profound.
Hartland, Vermont, rare. Hudson's bay, south to New York; Michigan; Idaho; Utah.

44 Ancylus parallelus
Hartland, Vermont, rare.

45 Valvata tricarinata
Abundant in the Connecticut river, Hartland, Vermont. Wisconsin.

46 Melantho decisa
Windsor Co., Vermont, common.

47 Amnicola limosa Say
Hartland, Vermont, abundant. Utah.

48 Carychium exiguum
Oval-elongate, white, translucent, shining; spire long, apex

obtuse: whorls 5 or 6, convex, very oblique; aperture oval, white, columella plaited in the middle, and slightly folded also near the base; lip thick, reflected; umbilicus perforated; length 1.6, diameter .6 mm.

Hartland, Vermont, abundant. Found on stones and about wharves, at Portland, Oregon, where it is sometimes covered at high tide. Texas.

49 Pisidium adamsi
50 Pisidium compressum
51 Pisidium virginicum
52 Sphaerium securis
53 Sphaerium sulcatum
54 Sphaerium similis
55 Anodonta undulata
56 Unio complanatus
Numbers 49 to 56—Hartland, Vermont, all abundant.

57 Unio Heterodon
58 Margaritana undulata
Numbers 57-58—Hartland, Vermont, rare.

59 Tracy, Charles Oliver
List of land and fresh water shells, collected in Windsor Co., Vermont.

The above list enumerated 60 species and forms (as shown in my numbers 1 to 58), with abundance or rarity noted. The nomenclature is not changed, and shows the names familiar to naturalists of the time. No date is given in the list. The death of this promising student is recorded in an early volume of the West American Scientist.

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60 Orcutt, Charles Russell:
Shells of Lagoon Head. Published in West American Mollusca, 1:28. The following (numbers 61 to 137), is an amplification of the above list. The list was the result of two or three days spent in the latter part of February, 1899, mostly spent in botanizing. No rocky beach was visited, all the living shells being collected in the lagoon, nearly due east of Cedrus Island, the landing being known locally as Santo Domingo. It is near the 28th degree north latitude, on the west coast of Baja California, a few miles north of Scammon's Lagoon.

61 Purpura biserialis
A single large and fine living specimen was found by the writer some years before on the rocks near La Jolla, San Diego, Cal., the most northern locality known for this species. Only beach worn shells were found at Santo Domingo, but the species was found abundant at San Juan, Baja Cal., and at other points in the Gulf of California, and at Mazatlan, Puerto Angel, and Salina Cruz, Mexico.

62 Chorus belcheri
Shell often 6 inches long, color dull white somewhat tinged with brown; canal long, to the left of which is a deep, funnel-shaped umbilicus; spire beautifully crowned with circles of sharp horns, and about the middle of the outer lip there is a large pointed tooth.

San Pedro, and San Diego, Cal., formerly abundant at San Diego (during the early whale fisheries), but now rare; abundant

at Todos Santos bay, Baja Cal., and dead specimens observed at Santo Domingo.

63 Ranella californica

Length 3-6 inches; color yellowish brown outside within pure white; shell strong and solid, marked with many knobs and ridges.

The Frog Shell has been recorded from Santa Barbara, Monterey bay, and San Diego, Cal., and from Todos Santos bay and Santo Domingo, Baja California. I have also found it fossil at Borrego Springs, on the Colorado Desert.

64 Macron aethiops

Shell dark brown, 3 or 4 inches long; aperture very large, outer lip thin, the canal a mere notch. Catalina Island, Cal., and abundant in San Quintin bay, Baja Cal.; Santo Domingo, not rare, and in the kitchen middens.

65 Nassa Tegula

Shell strong, 12-20 mm long, dark gray in color, within white; aperture small, inner lip covered with a large callus of smooth, white enamel.

Santa Barbara, Cal., to Mazatlan, Mexico, and Panama? A form like Nassa vibex was found in the Gulf of California by Fischer. Collected at Santa Rosalia, Baja Cal., and at Guaymas, Sonora. Abundant on muddy bay shores at San Diego, Cal., and at Santo Domingo.

66 Myurella simplex

Shell slender, 3 cm long, whorls about 12, spire acute, aperture small; canal short, recurved; a line of beads follows the sutures, color white or brownish.

Abundant at low water, on the sandy shores of San Diego bay, Cal., and at Santo Domingo and San Juan, Baja Cal. Santa Barbara, Cal.

67 Conus californicus

Shell about 1 inch long, solid; epidermis chocolate brown, hairy; smooth.

Abundant on some sandy beaches near San Diego, Cal., at certain seasons; kitchen middens, Santo Domingo.

68 Cypraea spadicea

The Nut-cowry rarely exceeds 2 inches in length, and is marked by a dark brown ring, slightly lighter inside, on the back, with white lips; one of the most beautiful of the Californian shells.

Dall records very large specimens from Catalina Island; I have found it abundant in April and May at False bay, near San Diego, Cal., at very low water; also recorded from Chinatown Point, Monterey bay, Cal., and dead specimens—often quite large —are rather abundant at Todos Santos bay and Santo Domingo, Baja Cal., and several fine examples were found by pearl hunters at the latter place at the time of my visit.

Yates, Lorenzo G.: Nautilus 4:54, records from the Santa Barbara channel.

69 Neverita reclusiana

Shell solid, strong, white or outside sometimes dark brown, 2 or 3 inches in diameter, half as high; umbilicus nearly or quite covered by a thick patch of enamel which extends down the columella.

Monterey and San Diego, Cal., formerly abundant as now at Santo Domingo, Baja California.

70 Polynices uber

A single dead specimen was found in False bay, near San Diego, Cal., by my son, C. E. Orcutt; one living specimen was found at Santo Domingo, and others at San Juan, Baja Cal., and at Guaymas, Sonora. Occurs as far south as Peru, South America.

71 Crucibulum spinosum

The Cup-and-saucer limpet is well described by its popular name; it is under an inch in diameter, white to brown in color, with numerous short spines on its back; inside is a small white triangular cup; ofter the spines are worn down or apparently absent.

Common on rocks and shells along bay shores, San Diego, Cal., south to Peru; I collected it at Santo Domingo and in the Gulf of California, and at Salina Cruz, Oaxaca.

72 Crucibulum imbricatum

Recorded from Santa Cruz, Cal., to Chili. I have collected it at Santo Domingo and Magdalena Bay, Baja Cal., Manzanillo and Salina Cruz, Mexico. Attains a diameter of 2 or 3 inches.

73 Crepidula unguiformis

Santo Domingo, Baja Cal., one specimen.

74 Crepidula dorsata

Shell about half an inch across, nearly circular, thin, flat, wrinkled, brown and white; the small curved deck partly detached.

Vancouver Island to Chili. Observed on shells collected by the pearl divers at Santo Domingo, Baja Cal. Very variable.

75 Crepidula rugosa

Santo Domingo, Baja Cal., abundant.

76 Litorina scutulata

Greenish gray or nearly black; half inch long, within the aperture purplish in color; solid. Often with white bands or checked.

Sitka, Alaska, to Cape San Lucas. The most abundant species at San Diego, in sheltered places, on rocks and sea grass; abundant at Santo Domingo, Baja Cal.

77 Litorina planaxis

Nearly globose with an elevated spire; columella flattened; often banded with white.

Cape Mendocino, Cal., abundant on rocks at San Diego, Cal., rare at Santo Domingo, Baja Cal.

78 Cerithidea sacrata

Abundant in salt marshes and on muddy flats, San Diego, Cal.; one dead specimen at Santo Domingo, Baja Cal.

79 Barleeia subtenuis

Shell small, slender, reddish-brown, apex obtuse, whorls 4, suture distinct, aperture subovate, lip acute, length 2.5 mm.

Very abundant on sea grass at San Diego, Cal., and at Santo Domingo, Baja Cal. Also recorded from the Farrallone and Santa Barbara Islands, Cal., Cape San Lucas and Mazatlan.

TRUNCATELLA

A genus of unisexual, amphibious, snails, mostly tropical. They occur near the sea, on sea-weeds thrown up on the shore, among rocks, or in shallow water. Animal with eyes at the rear of the base of the two contractile tentacles. Shell small, cylindric or pupoid, with small oval aperature and thin spiral operculum. Whorls transversely ribbed. As the animal approaches maturity, the upper portion of shell breaks off, the animal closing up behind it with a calcareous deposit when it abandons the outgrown parts. On account of this truncation of the shell, the genus has received its name. About 100 species have been described. Named by Risso.

80 Truncatella californica

Shell imperforate, thin, translucent, slightly striate; deciduous part of about 5 whorls, acute, gradually enlarged to a maximum of 2 mm; the mature shell usually of about 4 whorls, quite convex, the last one not carinate below; aperture vertical suboval, lip simple, continuous, slightly expanded; mature shells of a maximum diameter of 2 mm, and length of 5, the whorls nearly uniform. The young shells attain a length of 5 mm before it begins to cast off its outgrown whorls.

Type locality: San Diego, California.

In November, 1913, the writer turned over a discarded coat on the edge of a flat subject to tidal overflow from the waters of San Diego bay, and in a space of about a cubic foot, in the folds of the coat, and in the honey-combed mass of decaying sea-grass beneath, discovered a colony of fully 10,000 of these beautiful shining, amber-colored shells, the white animals being quite lively, and in all stages of development.

Not rare at Santo Domingo, Baja Cal.

81 Truncatella stimpsonii

This I found in considerable numbers in company with Pedipes unisulcatus, on and under smoothly-worn boulders in caves on the ocean beach south of La Jolla, Cal., near high water mark. Very common at Santa Domingo, Baja Cal.

82 Pomaulax undosus

Shell 4 inches or more in height and diameter; shell of whitish pearl covered with a brown, fibrous epidermis; operculum horny within, outside strengthened with two heavy, curved ribs; whorls varied by numerous wavy ridges, and base ornamented with beaded circles.

Santa Barbara, Cal., to Cape San Lucas; common at San Diego and at Santo Domingo, Baja Cal. Cedros Island.

Quaternary:—Santa Barbara, Cal., to San Quintin, Baja Cal.; Borrego Springs, Colorado Desert.

83 Omphalius aureotinctus
Height and diameter about 3 cm; shell pearly white inside, solid, epidermis gray or nearly black, often nearly white with incrustating algae; whorls banded by a few heavy, rounded, spiral ridges, with wavy crossings; umbilicus large, stained a bright yellow.

Monterey (?) and San Diego, Cal., to Santa Margarita Island, Baja Cal. Santo Domingo, and Cerros Island, Baja Cal.

84 Haliotis cracherodii Leach
Shell 110-125 mm long, 90-100 mm wide, about 40 high; 2-16, usually 5-7 holes 5-12 mm apart and 3-5 in diameter; epidermis dark bluish green or olive, commonly distinguished as the "black abalone;" interior pearly white, with (rarely blue, green, and) rose irridescence; scars of the closed holes show nearly to the apex of the shell, especially plain in perfect polished specimens; epidermis sometimes of a beautiful reddish brown.

Farallon Island to Turtle bay, and Cape San Lucas, Baja Cal.; at Santa Rosalia, north of Lagoon Head, hundreds of sacks of this species were loaded on the steamer at the time of my visit. Abundant at common low water at San Diego, and at Todos Santos bay, Baja Cal.; very variable.

85 Haliotis splendens Reeve
Not rare on rocks below tide, from Catalina Island, Cal., to Cedros island, and received from Magdalena bay. The pearl fishers at Santo Domingo, Baja Cal., had only two or three at the time of my visit.

The famous Blue Abalone; brilliant with lustrous blue and green irridescence; holes 4-7; credited with a length of a foot.

86 Haliotis corrugata Gray
A large arched shell, very rough, with 3-5 holes, around which are formed prominent tubercles with acute edges; margin crenulated.

Santa Barbara, Cal., to Cerros Island, Baja Cal.; the pearl fishers at Santo Domingo, Baja Cal., had about two dozen fine typical specimens. Apparently occurs in deep water; not common.

87 Fissurella volcano
Shell about an inch long, oblong-conical, with red stripes on its sides running down from the small oblong hole at the top, suggests streams of red hot lava issuing from the crater of a volcano; the coloring is most brilliant on beach worn specimens.

Monterey, Cal.; larger and more numerous at Todos Santos bay than in the vicinity of San Diego, where it is also abundant; found dead at Santo Domingo, and Fischer found it at Tres Marias, in the Gulf of Cal.

88 Fissurella violacea
Santo Domingo, Baja Cal., one dead.

89 Lucapina crenulata
At San Diego, this great species is not rarely found on the rocky ocean beaches, in pools, or among the sea-grass with Aplysia Californica. Dr. R. E. C. Stearns records from Monterey, Cal., and I have found it at Todos Santos bay and at Santo Domingo, Baja Cal. According to Dall, very young specimens are of a lurid pink.

90 Acmaea patina
Santo Domingo, Baja Cal. Aleutian Islands to Mazatlan.

91 Acmaea spectrum
An abundant species, very variable in form at San Diego, and at Todos Santos bay; Cape Mendocino, Cal., Santo Domingo, Baja Cal., small.

92 Lottia gigantea
Owl-shell; outside wavy, rough, olivaceous to light brown, or mottled with white and black; average height about 2 cm, length of the largest specimen seen, 10 cm; margin of shell within of a rich chocolate, center white, decorated with a lighter brown, forming a figure greatly resembling an owl in many examples.
Dr. R. E. C. Stearns records from Monterey; abundant at San Diego and Todos Santos bay, and Santo Domingo, Baja Cal.

93 Cylichna inculta
Abundant on the sandy shores of San Diego bay; Santo Domingo, Baja Cal.

94 Bulla nebulosa
Santa Barbara, Cal., plentiful on muddy flats of San Diego bay, Cal., Santo Domingo, Baja Cal., to Gulf of Cal.
The Clouded bubble-shell is a beautiful species, attaining a length of 6 cm, and a diameter of 4; the epidermis of a chocolate brown, when worn off leaves a thin polished mottled shell.

95 Haminea vesicula
Length 20, diameter 15 mm; shell very thin and delicate; color white or pale green, covered in life with a thin epidermis of a light golden brown, sometimes a deeper shade.
Santa Cruz, Cal., to Cape San Lucas. A beautiful pink form observed at La Playa, San Diego; I have seen tens of thousands at a time on the shores of San Diego bay; at San Quintin bay I have seen it equally abundant, of a larger size and deeper coloring, specimens an inch long being common. Abundant at Santo Domingo, Baja Cal.

96 Haminea virescens
In crevices of rocks and interior of rock pools, abundant, Santa Barbara, Cal., south to Santo Domingo, Baja Cal.
Shell of a delicate sea-green color, as long as H. vesicula but of a smaller diameter.

97 Melampus olivaceus
Obconic; spire short, suture indistinct; whorls 7-9, obtusely angulated on the body below the suture; aperture long and narrow, lip covered with sharp laminae within, parietal wall with from 1-3 small revolving laminae; there is also a stout fold on the columella; epidermis olivaceus, below which the color is white with patches or revolving lines of red; length 13, diameter 8 mm.
Salinas river, Cal., to Gulf of Cal. Abundant in salt marshes at San Diego; and at Santo Domingo, Baja Cal., and reported from Mazatlan.

98 Pedipes unisulcatus
Found living in abundance at San Diego, Cal., with Truncatella Stimpsonii, and at Todos Santos bay and Santo Domingo, Baja Cal.; San Pedro, Cal., to Gulf of Cal.

99 Zirphaea crispata

Circumboreal; England, North Carolina, Straits of Fuca to San Diego, Cal., on the Pacific coast; Santo Domingo, Cal.

Dall, W. H.: Notes on the anatomy of Pholas (Barnea) costata Linne, and Ziphaea crispata Linne. Phila. acad. pr 1889: 274-276.

100 Solen rosaceus

Length 6, width 1 cm, about 5 mm thick; very delicate, rose-colored, with a polished horn-colored epidermis; shell straight, abrupt at one end, rounded at the other.

Santa Barbara, Cal., to La Paz, Baja Cal. Beautiful and large specimens were found at Santo Domingo, Baja Cal., 7 cm long. In San Diego bay I once found thousands of these beautiful shells strewn along the shore; usually seems rather rare.

101 Tagelus Californicus

Santa Barbara, Cal., to Gulf of Cal. Abundant at Santo Domingo, Baja Cal., specimens 12 cm long being found.

102 Cryptomya Californica

Straits of Fuca, not rare at San Diego, Cal., and dead specimens found at Santo Domingo, Baja Cal.

103 Clidiophora punctata

Shell oblong and beaked, very flat and compressed, valves thin, silvery white, within strongly punctate, about an inch long.

Straits of Fuca to Gulf of Cal., low water to 30 fathoms; Santo Domingo, Baja Cal., dead specimen.

104 Semele decisa

Santa Barbara, and San Diego, Cal., Santo Domingo, Baja Cal., dead.

Shell 8 cm in diameter and width, being nearly round, and 4 cm in thickness; outside coarsely wrinkled and light brown; within white, beautifully tinged with rose purple, especially near the margin.

105 Lyonsia Californica

Vancouver Island. Often washed ashore in great numbers on the shore of San Diego bay; found abundant at Santo Domingo, Baja Cal.

106 Periploma argentaria

San Pedro, Cal., to Gulf of Cal. Santo Domingo, Baja Cal., dead.

107 Sanguinolaria nuttallii

Shell 5 by 7 cm, 2 thick; thin; epidermis dark brown especially near the margin; shell white, showing rays of lilac beneath the epidermis; hinge ligament just behind the beaks, is very prominent.

Santa Barbara, Cal.; Japan. Abundant at San Diego, Cal., and at Santo Domingo, Baja Cal.

108 Tellina rubescens

Shell rather solid, 4.5 by 2.5 cm, about 1 thick; marked with strong lines of growth; color inside and out a rather deep rose purple and white.

Santo Domingo, Baja Cal., living, to Cape San Lucas and Panama.

109 Tellina variegata
Straits of Fuca; Santo Domingo, Baja Cal., not rare.
Carpenter's Angulus variegatus, Tellina Carpenteri of Dall.

110 Heterodonax bimaculatus
This beautiful shell has been found on the coasts of Georgia and Florida, Cuba, Brazil, and on the Pacific coast from Santa Barbara, Cal., to Panama. I have found the various color varieties, white, purple, etc., in abundance at San Diego, Santo Domingo, and Magdalena bay.
It is the Tellina vicina of C. B. Adams.

111 Macoma indentata
Monterey, Cal., and Santo Domingo, Baja Cal., abundant.

112 Donax Californicus
San Luis Obispo, Cal.; abundant on sandy ocean beaches at San Diego; and at Santo Domingo, Baja Cal., common.
This is Deshay's Donax laevigata.

113 Donax flexuosus
Santa Barbara, Cal., to Panama; not common at San Diego(?), a few fine examples obtained at Santo Domingo, Baja Cal.
This is Hanley's D. navicula, now claimed to be the true D. Californica of Conrad.

114 Venus fluctifraga
The common cockle in California, occurring from San Pedro to the Gulf of Cal., often collected for food, and of excellent quality; often pearl-bearing, the pearls being irregular in shape, and of a deep purple. One distorted specimen found at Santo Domingo, Baja Cal.

115 Venus succincta
Santa Barbara, Cal., to Ecuador; Fischer collected this at Las Animas, in the Gulf of Cal., and I found it large and abundant at Santo Domingo, Baja Cal.

116 Tivela crassatelloides
Santa Cruz, Cal., to Santo Domingo, Baja Cal., common.
Mawe's T. stultorum. See No. 765.

117 Tivela radiata
Santo Domingo, Baja Cal., appearently not common, to Ecuador.

118 Amiantis callosa
Shell pure white, solid, with numerous concentric rounded ridges. About 4 inches long. Santa Barbara, Cal., to Cape San Lucas; rare at San Diego, abundant at Todos Santos bay, and at Santo Domingo, Baja Cal.
See Callista and Cytherea.

119 Cytherea chionaea
Santo Domingo, Baja Cal., edible, not abundant?

120 Tapes staminea
(See No. 2176.)

121 Cardium procerum
Santa Margarita bay, Baja Cal., to Peru. Santo Domingo.

122 Liocardium elatum
Formerly not rare, below low-water mark, on the muddy flats of San Diego bay and False bay, and at Todos Santos bay; Santo Domingo, Baja Cal., and in the Gulf of Cal.

123 Liocardium substriatum
Monterey, Cal., to Santo Domingo, Baja Cal., and to South America?

124 Chama exogyra
Bodega bay, Cal., to Santo Domingo, Baja Cal., and the Gulf of Cal. Mazatlan? Abundant on our rocky beeches.

125 Arca Multicostata
A large edible clam, rarely found at Catalina Island and at San Pedro, Cal., abundant at Santo Domingo, Baja Cal., south to Central America.

126 Mytilus Californianus
"This species can easily be distinguished by the conspicuous ribs, which are never wholly absent, particularly on the newest parts of the shell. The beaks of old specimens are apt to be much eroded, but the growing edge is protected by a glossy epidermis. The general color of the shell is purple, though the thicker parts of it are white, and sometimes there are streaks of brown, which harmonize remarkably well with the purple. Occasionally a very large and perfect specimen is polished on a lapidary's wheel, and the result is remarkably pretty. But far more often we see nature's method of bringing out the colors. If you find a little beach near a mussel ledge you will notice that the sand contains unnumbered bits of blue and white and brown, all bright and polished and forming the most lovely bed of gaily colored gravel. If you examine the pieces you will find that most of them are nothing but broken mussel shell, and you will admire the bright colors which blend so perfectly. And while speaking of colors, let me ask you to observe the combinations all along the rim of the ocean. What soft tints of olive green in the sea-weeds, enlivened by the brilliant red of a star-fish or the bright emerald of a frill of Ulva! How beautifully they harmonize with the gray of the rocks and the blue of the sea and sky! What fertile suggestions for an artist who is seeking new patterns for a fabric or a carpet!"—Josiah Keep.
Queen Charlotte Island, British Columbia, to Santo Domingo, Baja Cal., abundant at San Diego. The flesh of this mussel is bright orange, and is most excellent when pickled.

127 Modiola capax
Puget Sound, Washington, to Peru. Abundant in some localities near San Diego, and found at Santo Domingo, Baja Cal.; the shell, denuded of its epidermis, often appears of a brick red color; by some it is considered identical with M. modiolus, of Linnaeus.

128 Septifer bifurcatus
Abundant at San Diego, Cal., south to Santo Domingo, Baja Cal. Farallon Islands.—Cooper.

129 Pinna lanceolata
Santo Domingo, Baja Cal., in the kitchen middens.

130 Avicula Peruviana
Found abundant by the pearl fishers at Santo Domingo, Baja Cal. Cape San Lucas; Muleje bay. Peru.

131 Pecten subnodosus
Cedros Island, Santo Domingo in the kitchen middens, Cape San Lucas, La Paz., Baja Cal.; Acapulco?

132 Pecten monotimeris
Monterey to San Diego, Cal.; Santo Domingo, Baja Cal., rare.

133 Pecten aequisulcatus
Monterey, Cal., formerly abundant at San Diego bay and Todos Santos bay, and still extremely abundant at Santo Domingo, Baja Cal. Often sought for food in the days of abundance.
Quaternary:—San Diego, Cal., and Borrego Springs, Colorado Desert.

134 Anomia lampe
Santa Barbara, Cal., to Peru. Todos Santos bay and Santo Domingo, Baja Cal., where thousands of fine specimens were found, attached to each other, or to other shells, bits of wreckage, etc. Also found at Guaymas, Sonora.

135 Ostrea lurida Cpr.
Sitka, to Cape San Lucas, Baja Cal.; abundant and very variable in size and form at San Diego; common at Santo Domingo, Baja Cal.

136 Labiosa undulata
Raeta Undulata of Gould.
San Pedro, Cal., Santo Domingo, Baja Cal., dead.

137 Dosinia ponderosa
San Pedro, Cal., to Peru. One of the common edible clams at Santo Domingo, Baja Cal. One of the common fossils at San Diego.

———o———

138 Orcutt, Charles Russell:
Notes on the mollusks of the vicinity of San Diego, Cal., and Todos Santos bay, Lower California. With comments by W. H. Dall. U. S. National Museum proceedings, 8:534—552, t 24.
The following (numbers 139-332), are noted in the above paper, besides many of those already named above, as from Santo Domingo, Baja Cal.

139 Octopus punctatus Gabb
Common on rocky beaches.

140 Murex trialatus Sby
Rocky beaches, rare at San Diego, more common south. Varies in color from pure white to brown, often banded.

141 Cerostoma nuttallii Conr.
Rocky beaches, abundant and very variable in form and color. The pure white, olivaceous, banded and brown varieties are distinctly and prettily marked. Also at Todos Santos bay.

142 Muricidea barbarensis Gabb
A very large and old specimen of this was found on the ocean side of Point Loma, inhabited by a hermit crab.

143 Muricidea incisa Brod
Rare, occasionally found near low-water mark.

144 Pteronotus festivus Hinds
Abundant at False bay, La Playa, and Todos Santos bay, among small, angular boulders.

145 Ocinebra subangulata Stearns
A live individual washed ashore on a piece of kelp, found on the ocean side of the San Diego peninsula, is now in the collection of the Phil. Acad. Sci.
Synonym of Muricidea subangulata.

146 Ocinebra interfossa Cpr.
Under rocks partially imbedded in shell sand, rocky beaches, at San Diego. Santa Barbara (Yates). Vancouver Isl.

147 Ocinebra gracillima Stearns
"Shell small, solid, fusiform, slender; spire subacute; whorls 6-7; body whorl about two-thirds the whole length. Upper part of whorls subangulate, aperture about as long as the spire. Outer lip thickened internally; white, with 4 prominent denticles. Columellar lip excavated, callous, with a purplish stain showing through the enamel. Canal moderate, closed. Surface smooth, with numerous fine whitish revolving costae, dotted with brown, the interspaces near the outer lip with brown linear markings. Upper whorls longitudinally nodosely ribbed. General color olivaceous, with patches of yellow. Lon. .5; Lat. .25 in. Habitat—San Diego, California, 10 fms.: Hemphill."—Robert E. C. Stearns, Conchological memoranda, No. 6 (May 18, 1871); "Am J Conch 7:—(1871) with f."
Under stones, San Diego.
"A few at Point Fermin," near San Pedro, California, fide Mrs. Williamson (U S Nat. mus pr 15:215).

148 Ocinebra interlirata Stearns
San Diego. Rare.

149 Ocinebra poulsonii Nutt
Equally abundant and in similar situations with Pteronotus festivus, Hds. Also at Todos Santos bay. Santa Barbara. Cerros Isl.

150 Purpura saxicola Val
Abundant on a rocky beach just south of the boundary line, but not noticed on other ocean beaches either at San Diego or All Saints bay. Monterey.

151 Monoceros lugubre Sby
Abundant at Todos Santos bay and north to near the United States line. Light-colored individuals were found of a shade of yellow ochre, merging to white.

152 Monoceros engonatum Conr
Abundant on exposed shingle beaches, Balenas bay to Todos Santos bay.

153 Monoceros pauciliratum Stearns
"Shell moderately elevated, whorls 4-6; body whorl four-fifths the total length; angulated above and excavated between the angle and the suture; a sharp groove behind the tooth. Upper whorls

cancellated, nucleus smooth. Aperture elongate, purple brown in the throat; outer lip sharp, yellowish, internally denticulated, with a prominent tooth at its outer edge. Columella purple, canal short, umbilicus nearly covered by the columellar callus. Siphonal fasciole strong. Externally painted with longitudinal broad black and narrow whitish streaks, interrupted by the white dental groove and 3 or 4 narrow yellowish revolving carinae, which, except the keel, are inconspicuously elevated. Lon. .55; Lat. .33 in. Habitat—Coronado Islands, off San Diego, California. Hemphill, 3 specimens."—Robert E. C. Stearns, Conchological memoranda No 6 (May 18, 1871); Am J Conch 7:—(1871), with f.

Exposed shingle beaches. Also at Todos Santos bay.

(This species forms the link between the two preceding species. D.)

154 Monoceros engonatum var. spiratum Blainv

More common on sheltered rocky beaches. Santa Rosa Island to Todos Santos bay.

155 Fusus kobelti Dall, var. **unicolor**

One specimen. San Diego.

[It differs from the type in being more slender and in the absence of the usual chocolate color on the larger riblets.—Dall.]

156 Siphonalia kellettii Fbs

Very rare at San Diego, apparently abundant at Todos Santos bay, where large numbers of dead shells are washed ashore.

[Dredged alive in 16 fathoms off Catalina Island harbor in 1873.—Dall.]

157 Macron lividus A Ad

Not rare near low water; ocean beaches. Also Todos Santos bay.

158 Nassa fossata Gould

Dead shells of this and the following abundant, apparently common in deep water.

159 Nassa perpinguis Hinds

San Diego. Also at Todos Santos bay.

[Not rare at Catalina in 16 fathoms. D.]

160 Nassa mendica var, cooperi Fbs

Rare at low water at La Playa, also at Todos Santos bay.

161 Mitra maura Swains

Dead shells often washed ashore on the ocean beaches. Santa Barbara Islands.

162 Erato vitellina Hds

Not common.

163 Erato columbella Mke

False bay and La Playa. Rare.

164 Marginella regularis Cpr

San Diego. Not rare. Monterey.

165 Marginella subtrigona Cpr

San Diego. Rare. Monterey, and Santa Barbara, Cal.

166 Volutella pyriformis Cpr
On sea-grass, probably abundant, San Diego bay.

167 Volvarina varia Sby
Common beneath rocks partially imbedded in shell sand, ocean beaches.

168 Olivella biplicata Sby
Abundant on sandy ocean beaches about May. Pure white and, more rarely, black individuals may be found.

169 Olivella bœtica Cpr
Abundant on sandy beaches at False bay and elsewhere in May.

170 Columbella fuscata Sby
One specimen found on sea-grass at San Diego.

171 Columbella (Astyris) carinata Hds
Found abundantly on sea-grass during the spring. Very variable in form and coloring.

172 Columbella (Astyris) tuberosa Cpr.
Dead specimens abundant; not found alive. Straits of Fuca. Santa Barbara.

173 Amphissa versicolor Dall
Not rare, with Volvarina varia, Sby. San Francisco bay to Todos Santos bay.

174 Anachis subturrita Cpr
Found among oyster shells from an old pile below low-water mark.

175 Surcula carpenteriana Gabb
Todos Santos bay, dead on beach.

176 Drillia moesta Cpr
Abundant in the spring at La Playa and elsewhere. Also at Todos Santos bay.

177 Drillia inermis Cpr
Specimens occasionally found at low water, but apparently common in deeper water.

178 Mangilia angulata Cpr
Not common; sandy beach at La Playa, with Cylichna inculta Gld.

179 Mitromorpha filosa Cpr
Under boulders imbedded in shell sand, ocean beaches, near low-water mark; rare. Also at Todos Santos bay.

180 Trivia californica Gray
Dead specimens of this are not uncommon, but I have not found it living.

181 Trivia solandri Gray
Rare; living specimens have been found at La Playa and False bay during the spring tides. Dead specimens not rare at Todos Santos bay.

182 Lunatia lewisii Gld
Rare; apparently common in deep water and farther south.

183 Sigaretus debilis Gld
I have a single broken individual from San Diego, and another from Todos Santos bay.

184 Lamellaria diegoensis
False bay at low water, April and May; rare. When living the soft parts completely cover the shell and are, in part, of a vivid red color similar to that of Doris sanguinea.

[Soft parts as contracted in alcohol about .65 inch in length, above smooth or nearly so, dull white or grayish, beneath lighter colored; form rounded oval, a well-marked notch in the mantle edge (notaeum) a little to the left of the middle line in front; foot rather large, rounded behind, nearly transversely truncate in front with rounded corners and the front margin deeply grooved or double; head dark gray above, flattened; tentacles obtusely tapering, somewhat flattened; eyes large and black, on tubercles outside of the bases of the tentacles; mouth hidden under the head, small; verge extremely large, broad, flattened, extending forward beyond the head, curved to the left in a broad ascending spiral; smooth below, granulous above with a short line of elevated papillæ inside the edge of the outer part; beyond the curve is an indentation on the left side behind which is a stout conical papilla from the apex of which extends upward a slowly tapering cylindro-conic tubular portion; the nuchal cavity is prolonged backward under the anterior edge of the immersed shell; shell calcareous except the immediate margins of the aperture, grayish waxen white, slightly irridescent with a mucilaginous polish like dry glue inside and out, somewhat malleated, with indications of the lines of growth by obscure slightly elevated transverse waves and faint irregular spiral tracings; three-whorled, very much inflated, though the form varies slightly between individuals and probably between the sexes; nucleus small, smooth; suture deep, not channeled; spire pervious from below; columella less calcareous than the shell in general, without callus or any thickening, twisted into an open spiral, continuous with the outer lip in front only; aperture very oblique, subquadrate. Alt. 15; max. lat., 17; long. of aperture, 12; lat. of aperture, 19 mm.

This shell was first received from Mr. Henry Hemphill of San Diego; subsequently other specimens came to hand from Cape St. Lucas. As will be seen from the characters of the soft parts, it is a true Lamellaria (Marsenia, Leach, is a later and synonymous name). It is more inflated and elevated than any European or West American form known to me.

Lamellaria stearnsii Dall (1871) is a depressed and much more calcareous species, which has the soft parts translucent white, and the shell distinctly finely striated. Lamellaria rhombica Dall proves to be a Marsenina, though the shell does not greatly differ from that of L. stearnsii, and should take the name of Marsenina rhombica. The two forms of L. stearnsii, one of which was described as a variety orbiculata, may turn out to be sexually distinct, as the differences are such as mark the two sexes of the common British species according to Jeffreys. Both the just mentioned forms, as well as Marsenina rhombica, were collected at Monterey; while L. diegoensis seems to belong to the southern fauna. D.]

186 Crepidula navicelloides Nutt
Abundant in the interior of dead univalves, varying in size according to the shell occupied.
In dead bivalves assuming the form nummaria Gould

187 Crepidula dorsata var **lingulata** Gld
Abundant on rocks at La Playa and elsewhere. Very variable in form, but well marked by the form of the deck.

188 Hipponyx tumens Cpr
Abundant with the next species.

189 Hipponyx antiquatus L., var **serratus** Cpr
Abundant under stones or shelving rocks, ocean beaches.

190 Scalaria hindsii Cpr and var **subcoronata**
Not common.

191 Scalaria indianorum Cpr
Not rare; San Diego. Santa Barbara (Yates).

192 Scalaria bellastriata Cpr
Very rare. San Diego.

193 Opalia crenatoides Cpr
San Diego; not common. Also Todos Santos bay.

194 Ianthina bifida Totten
Specimens often washed ashore at San Diego.

195 Odostomia nuciformis Cpr var **avellana** Cpr
San Diego.

196 Odostomia inflata Cpr
Type locality:—Neeah bay, Washington (Swan).
San Diego; not rare. Also a variety (?) more slender and elevated proportionally, but otherwise similar.

197 Odostomia æquisculpta Cpr
Abundant on the shells of Haliotis.
[San Diego to Cape St. Lucas. D.]

198 Turbonilla torquata Gld
Abundant on the shells of Haliotis, San Diego; Todos Santos; Santa Barbara.

199 Turbonilla aurantia Cpr
San Diego. Santa Barbara (Yates).

200 Chrysallida pumila Cpr
[Rare. Todos Santos. D.]

201 Obeliscus variegatus Cpr
San Diego bay; dead specimen; rare.

203 Lacuna variegata Cpr
On sea-grass; abundant in spring.

204 Lacuna unifasciata Cpr
San Diego. Not common.

205 Rissoina interfossa Cpr
[Todos Santos. D.]

206 Isapis fenestrata Cpr
Specimens from among oyster shells below low water, off an old pile from San Diego bay. Also Todos Santos bay. Unalaska.

207 Mesalia tenuisculpta Cpr
San Diego.

208 Bittium quadrifilatum Cpr
San Diego.

209 Bittium armillatum Cpr
Abundant on sponges found during the spring on muddy flats, San Diego bay, at low water; dead ones abundant among worn shells.

210 Cerithiopsis assimilata C B Adams
San Diego. Not found alive. Monterey, Cal., to Panama.

211 Cæcum californicum Dall
Cæcum Cooperi Cpr. Suppl. Rep. Br. As. 1864, p. 655, not Cæcum Cooperi Smith, Ann. Lyc. Nat. Hits. N. Y., pp. 154, 168. 1862.
San Diego. Cooper. Monterey, Cal., to Baja Cal.
[The above synonymy shows that of the two species named C. Cooperi, that of Mr. Sanderson Smith has priority, and consequently the Californian species is the one which must take the new name instead of the New York form. Through a failure to observe this Dr. Cooper fell into the error of renaming C. Cooperi (New York) as C. Smithii (Proc. Phil, Acad. Nat. Sci. 1872, p. 154). D.]

212 Cæcum orcutti
[Shell small, stout, smooth, but not polished, light warm brown in color and without sculpture, except very slight lines of growth. Shell slightly curved, the anterior aperture very oblique, about at right angles to the plane of the diameter of the plug, the superior margin being the anterior; plug glandiform, smooth, rounded without mucro; operculum brown, thin, smooth. Lon. of shell. 2.00; diameter 0.75 mm.
San Diego, Orcutt, abundantly, under stones.
This is the smallest and only smooth Californian species of the genus. Dall.]

213 Jeffreysia translucens Cpr
One specimen, San Diego.

214 Barleeia haliotiphila Cpr
San Diego. Rare. Monterey, Cal., to Baja Cal.

215 Bithinella binneyi Tryon.
Freshwater springs at Campo, San Diego County, California.

216 Bithinella intermedia Tryon
Freshwater springs on Cuyamaca Mountain, at a higher altitude than the last.

217 Phasianella compta Gld
Thousands found in sea-grass on the inside of San Diego peninsula in November, 1881. Usually incrusted with a small polyzoan (Defrancia intricata).
[The operculum is white, prettily clouded with dark green. D.]

218 Eucosmia substriata Cpr.
[Rare, San Diego, Dall. Catalina Island, rare, Cooper.]

219 Liotia acuticostata Cpr.
San Diego. Rare. Monterey; Catalina Isl.

220 Omphalius fuscescens Phil
Abundant on rocky beaches. Also Todos Santos bay.

221 Chlorostoma funebrale A Ad
Common on shingle beaches.

222 Chlorostoma gallina Fbs
Rocky ocean beaches; abundant. Also Todos Santos bay. The young are sometimes of a brick-red color.

223 Chlorostoma brunnea Phil
One from a shingle beach at Todos Santos bay.

224 Chlorostoma pfeifferi Phil
One dead specimen from San Diego.

225 Norrisia norrisii Sby
Abundant in kelp along the coast.

226 Calliostoma canaliculatum Mart
On kelp, specimens are rarely washed ashore.

227 Calliostoma annulatum Mart
I have one specimen from a San Diego beach.

228 Calliostoma costatum Mart
Not often washed ashore.

229 Calliostoma gemmulatum Cpr
Often washed ashore at San Diego and Todos Santos bay.

230 Leptothyra bacula Cpr
Abundant under rocks along the ocean beaches.

231 Leptothyra pauciliratа Dall
Rare.
[Specimens sent were of a magnificent crimson color. D.]

232 Leptothyra sanguinea var **lurida** Dall
Less common that the last.
[This form has a dull olivaceous cast sometimes mottled with whitish. The sculpture is more compact and closer, the nacre less brilliant than that of Monterey specimens; they are also smaller on the average. D.]

233 Haliotis assimilis Dall
Numerous dead specimens are washed ashore at the boundary beach from deep water.

234 Ethalia supravallata Cpr
San Diego. Not rare.

235 Fissurella (Glyphis) aspera Esch.
Not common. San Diego. Sitka, Alaska.

236 Fissurella (Glyphis) murina Cpr.
Not common. San Diego.
[This is the Glyphis densiclathrata of Californian conchologists, and for a time of Carpenter, but not of Reeve. D.]

237 Fissurellidæa bimaculata Dall
San Diego. Rare.

238 Clypidella (?) callomarginata Cpr
Not common.
[It is not certain that this is a Clypidella. D.]

239 Acmæa mitra Esch
Deep water; dead shells frequent.

240 Acmæa insessa Hinds
On algæ, San Diego, Cal., and Todos Santos bay, Baja Cal. Santa Rosa Island, Cal. (Yates).

241 Acmæa persona Esch.
Abundant and very variable in form and color. Alaska, to Socorro Island.

242 Acmæa pelta Esch. var.
A small elevated form is found beneath small stones imbedded in sand near high-water mark on the shores of San Diego bay. It is found in company with Chiton dentiens, Gld. and is not rare.

243 Acmœa asmi Midd
This very elevated little shell is found abundant on the shells of Chlorostoma funebrale, which it closely resembles in color.

244 Acmæa patina var. **cumingii** Rve.
Less abundant than the other species.
[This is nearly the southern limit of this form. D.]

245 Acmæa scabra Nutt.
See 2396.

246 Acmæa paleacea Gld
Common on sea-grass outside the harbor at San Diego, and also found at Todos Santos bay.

247 Acmæa depicta Hds.
On sea-grass; not rare.

248 Chiton (Leptochiton) nexus Cpr
San Diego.

249 Chiton (Trachydermon) dentiens Gld
With Acmæa pelta, var.
San Diego. [T. peudodentiens Cpr. D.]

250 Chiton (Callochiton) fimbriatus Cpr.
San Diego, Catalina Island.

251 Chiton (Chætopleura) hartwegii Cpr.
This with the two following are the more common species.

252 Chiton (Maugerella) conspicua Cpr
Abundant beneath bowlders on shingle beaches. San Pedro; San Diego. Todos Santos bay.

253 Chiton (Stenoradsia) magdalenensis Hds
Beneath bowlders at False bay; not rare.

254 Chiton (Pallochiton) lanuginosa (Cpr) Dall, 1878
[Hemphillia lanuginosa Cpr. MSS. The generic name was already preoccupied in Limacidæ. D.]

255 Chiton (Lepidopleurus ?) pectinulatus Cpr
San Diego, Cal.

256 Chiton (Callistochiton) decoratus Cpr
San Diego, Cal.

257 Chiton (Nuttallina) scabra Reeve
San Diego, Cal.

258 Chiton (Mopalia) ciliata (See No. 1280)

259 Chiton (Mopalia) lignosa acuta Cpr

260 Philine, species indet.
Flats on shores of San Diego bay, with Haminea vesicula.

261 Atys nonscripta A Ad
Rare at San Diego.

262 Tornatella punctocælata Cpr
Not common.

263 Tornatina eximia Baird
San Diego bay [Described from Vancouver. D.]

264 Aplysia californica Cooper
Ocean beaches among sea-grass or in rock pools.

265 Doris sanguinea Cooper, Cal ac pr 2:204.
Under rocks, San Diego; rare.
[Note.—The identifications of these nudibranchs are partly provisional in the absence of typically named specimens or figures. D.]
§Asteronotus. Brilliant red, with few large black spots irregularly distributed, surface smooth; dorsal tentacles short; branchiæ composed of 8 simply pinnate rays, expanding close to the posterior end of the body. Length ½, breadth ¼ inch, height about the same. Under stones in San Diego bay, rare.
Orcutt No. 22, among sea-grass and under stones on rocky beaches. Cooper, Cal. ac pr 3:58, reports: "4 specimens from Santa Barbara with D. montereyensis. Differ from original in having the black spots very small. Tentacles acute, cylindric-conic, retractile into a cavity bordered by a toothed membrane. I cannot discover the stellate valvular structure of the branchial opening which characterizes the genus Asteronotus, in these specimens."

266 Doris (Archidoris) montereyensis (Cooper) Bergh
Cooper, Cal ac pr 2:204.

Pale yellowish with scattered black spots (or entirely brown?), mantle rough tuberculate, or nearly smooth, dorsal tentacles knob-shaped, branchial rays bipinnate, short, in 8 divisions, forming a crown-shaped expansion on the posterior third of the dorsum. Foot expanded into broad, thin margin, as wide as the mantle. Length 3, breadth 1, height ¾ inch; form elongated oval. Dredged in 6-10 fathoms, in Monterey bay, California, adhering to fragments of sandstone. Dr. Frick found small specimens, apparently the same, in San Francisco bay, California.

Santa Barbara at low water, larger in size and deeper color; tentacles club-shaped, the branchial 7-8-parted, bipinnate and from one opening.

Orcutt, No. 19 (young fide Dall), from San Diego, appears described among my notes as follows:—animal translucent white, an inch or less long, the back of mantle liberally sprinkled with irregular dots and blotches of brownish black which are most conspicuous just behind the tentacles, near the center of the back, and just forward of the branchiæ.

267 Doris alabastrina Cooper Cal ac pr 2:204

§Asteronotus? "Alabaster white, opaque, form depressed-oval; dorsal tentacles short, acute, branchiæ of 12 simple rays expanding in the posterior fifth of the body. Length 4-tenths, breadth 3-tenths inch. Under stones, San Diego bay, only one found."

268 Doris albopunctata Cooper Cal ac pr 3:58 (1863)

"Form ovate, pointed behind, flattened, surface shining, minutely rugose. Tentacles club-shaped, retractile, branchial plume 6-8-parted, bipinnately divided, situated near the posterior extremity. Color yellow or orange brown, dorsal surface thinly speckled with small white dots, each forming a slightly raised papilla. Beneath paler. Length about 1, breadth one-third inch. Dredged from a rocky bottom in 20 fathoms a mile from the shore at Santa Barbara. Also found on rocks at low water mark near the N. W. end of Catalina Island. Bolinas bay.

Orcutt No. 25, San Diego.

269 Doris (Diaulula) sandiegensis (Cp) Bergh
J. G. Cooper, Cal ac pr 2:204.

Pale brownish yellow, with large annular brown spots irregularly scattered, varying from 10-20, or entirely brown. Surface slightly rough, sometimes a little tuberculate. Dorsal tentacles conical, retractile; branchiæ large, rising in 5 parts which become tripinnately divided, expanding so as to cover the posterior one-third of the body like an umbrella. Mouth proboscidiform, with 2 short lateral tentacles. Length 3½, breadth 2½, height ½ inch. Numerous among sea-grass on mud flats in San Diego bay, Cal., from November to May.

Among my notes I find:—"animal dirty white, ¾ inch long; mantle with 5-10 or more circles of dark brown irregularly placed along the edge of the thick mantle."—Orcutt, number 23, from San Diego, identified by Dall as this species.

Cooper doubtfully placed in the section Actinocyclus, and has reported 2 specimens from Santa Barbara, with tentacles conical, acute, and states that the branchial orifice does not agree with the "peculiar characters of Actironotus." Bolinas bay.

270 Chromodoris californiensis Bergh
San Diego; rare. [D.]

271 Pedipes liratus Binney
Shell globosely conical, solid, with regular spiral lines; spire short, with obtuse apex; whorls 3, the upper ones small, the last equalling five-sixths of the total length; aperture semi-circular; parietal wall with strong transverse lamina, columella with 2 acute approximate teeth. White or yellowish. Length 3.3, diameter 2.5 mm.
Living: San Diego, California (Orcutt). Cape San Lucas, Baja California.

272 Gadinia reticulata Sby
Common beneath shelving rocks on ocean beaches, Farallon Islands to Panama; Chili?
Synonymy:—Gadinia radiata Cpr.; Rowellia radiata Cp.

273 Netastomella darwinii Sby
Numerous in small bowlders, La Playa, Vancouver Isl., Chili?

274 Parapholas californica Conr
La Playa; abundant. Baulinas bay, Cal., Santa Rosa Island (Yates).

275 Penitella penita Conr
La Playa.

276 Martesia intercalata Cpr
Todos Santos bay imbedded in shells of Haliotis.

217 Solecurtus californianus Conr
Abundant, with the less common variety subteres.
[Very close to the eastern species. D.]

278 Siliqua lucida Conr
Several examples have been found on the sandy ocean beaches at San Diego and Todos Santos bay.
[This seems to be a valid species, though closely allied to S. patula. D.]

279 Platyodon cancellata Conr
Abundant at La Playa where they have been collected for food, but the animal is bitter. Also Todos Santos bay, but not found alive.

280 Saxicava rugosa Linn
Young specimens not rarely found among the roots of kelp when washed ashore by a storm.

281 Corbula luteola Cpr
Common beneath stones on the ocean beaches that are partially imbedded in shell sand. San Pedro to Todos Santos bay.

282 Corbula sp. indet.
San Diego and Todos Santos bay.
[A very thin species, resembling a Eucharis; perhaps from Southern fauna. D.]

283 Schizothaerus nuttallii Conr
San Diego; Todos Santos bay. Kodiak Island, Alaska. Japan.

284 Pandora (Clidiophora) punctata Cpr
Single valves often washed ashore on sandy beaches.

285 Thracia curta Conr
Not rarely found imbedded in rocks; San Diego. Santa Rosa Island (Yates).

286 Thracia plicata ? Desh
Numerous dead shells of this are washed up on the shores of San Diego bay, with Lyonsia Californica and other bivalves.
[Described from Southern fauna, but in absence of a larger series the identification is not dogmatic. D.)

287 Entodesma scammonii Dall
One example found with the above species.

288 Mactra planulata Conr
Ocean beaches; not found abundantly. Also Todos Santos bay.

289 Mactra falcata Gld
Not found abundantly.
[Belongs to Northern fauna. D.]

290 Semele rupium Sby.
This abounds on the rocky ocean beaches, but rarely collected alive.

291 Lutricola alta Conr
Not plentiful.

292 Œdalina subdiaphana Cpr
Bay shores; abundant, San Diego, Vancouver Isl.

923 Cooperella scintillæformis Cpr.
With the last; rarer.

294 Cumingia californica Conr
La Playa; abundant in dead bivalves or in holes. Todos Santos bay.

295 Psammobia rubroradiata Nutt
(See 2905.) Avatcha Bay, Kamchatka. (Dall.)

296 Tellina Bodegensis Hds
Not plentiful; San Diego.

297 Tellina Gouldii Hanl
Abundant; San Diego bay. Also Todos Santos bay.

298 Macoma secta Conr.
Plentiful at times, as also indentata and inquinata.

299 Macoma inquinata Desh

300 Petricola carditoides Conr
San Diego; not numerous; burrows in soft rock the length of its shell.

301 Saxidomus nuttallii Conr
Collected for food and rather abundant in places.
[The distinction between this and the following form is often hardly specific. D.]

302 Saxidomus aratus Gld.
Found with the above and about equally plentiful.

303 Venus (Chione) simillima Sby
San Diego.

304 Cytherea undato-striata Cpr
Dead valves only have been found of this; San Diego bay.

305 Tapes staminea tumida Sby. See No. 2180.

306 Tapes staminea diversa Sby. See No. 2177.

307 Tapes laciniata Cpr. See No. 2178.

308 Cardium quadragenarium Conr
La Playa; rare. Odd valves abundant at Todos Santos bay.

309 Chama spinosa Sby
Less abundant, frequenting deeper water.

310 Lucina nuttallii Conr
San Diego.

311 Lucina californica Conr
San Diego.

312 Diplodonta orbella Gld
Found in holes in rocks or in dead bivalves at La Playa; not rare. Also Todos Santos bay. A single example of a much flatter species was found at San Diego, which is now in the collection of the Philadelphia Academy of Sciences.

213 Tellimya tumida Cpr
San Diego; not found abundantly.

314 Lasea rubra Mont
Found in great numbers near high-water mark attached to the byssus of Mytilus, in crevices, dead barnacles, and shells, or among small stones. Also at Todos Santos bay.

315 Kellia laperousii Desh.
In dead shells or among rocks; not rare.

316 Chlamydoconcha orcutti Dall
Dall, Science, 4:50 (18J1 1884). U S na mu pr 1885, 549. Or U S na mu pr 1885, 549:—False bay, near San Diego, California, under stones.

Animal somewhat of the shape of a small globose Cypraea, of inflated, ovoid form, translucent, jelly-like, dotted above with small, rounded papillae, which appear of an opaque white on the general translucent ground. Over an inch in length when living, contracting in alcohol to less than half. Mantle covering the dome of the body tough and thick; sides smooth, nearly free of the papillae, superior median line a little depressed; basal part of the anterior line in life prolonged beyond the general mass in a trough with the convexity upward, and somewhat expanded at

its anterior extremity; about one-third from anterior end the mantle is perforated by an orifice, which pierces it in the vicinity of the mouth. The edges of this orifice project from the general surface, lined with close-set small papillae. At about the same distance from the posterior end is another tubular perforation, holding a similar relation to the anus; which has, however, plain edges, and is not internally papillose. Beneath the anterior trough of the mantle prolonged backward, like a slit with plain edges, to about the posterior third; from this projects a narrow, hatchet-shaped foot, with a strongly marked byssus-gland at its posterior angle; from this a bunch of white byssus extends to the stone or object to which this mollusk attaches itself. The cavity of the mantle extends some distance behind the commissure of the pedal opening. The anterior point of the foot is roofed by the trough-like expansion above mentioned. The mouth is provided with 2 pairs of small palpi. Two gills very finely microscopically laminate, extend backward from near the mouth, on each side, to the posterior end of the body, the wider one being the inner; between their posterior ends a thin rectricularly perforate veil connects the two pairs, and shuts off the anal area from the rest of the mantle cavity. The intestine contains a hyaline stylet, and is considerably convoluted; but the viscera offer no marked peculiarities when compared with ordinary pelecypods. The shells are enclosed in two little sacs in the substance of the mantle. The umbones are near together, apparently connected by a brown gristle resembling an abortive ligament, and are nearly over the heart. The valves are about 10 mm long, 1 wide, destitute of epidermis, prismatic, or pearly layers. There are no muscular or pallial impressions, no adductors, hinge, or teeth. They resemble in form the exterior of Gervillia, as figured by Woodward, and are pure white. As they lie in the body, they diverge at a rather wide angle from the beaks forward. The embryonic valves are retained like 2 tiny bubbles on the umbones. The animal forms the type of a new family, Chlamydoconchae, and under the classification in the new edition of the Encyclopaedia Britannica, would form a new order, Amyaria, fide Dall, from whom the above is mainly compiled.

317 Leda cælata Hds

Odd valves occasionally washed ashore, San Diego, Monterey, Peru.

318 Yoldia cooperi Gabb

A single valve found on the ocean beach north of False bay.

319 Arca (Barbatia) gradata Sby

Abundant under stones at low water.

320 Cardita (Carditamera) subquadrata Cpr

Queen Charlotte Islands, in 20 fms.—Todos Santos bay, Baja Cal.

Shell small, solid, subquadrate, speckled with brown; soft parts yellow, with brown spots on mantle edge.

321 Milneria minima Dall

Ceropsis minima Dall, Am Journ Conch, vii, p 152, pl 16, figs 5, 6, 1871. (Generic name preoccupied.)

Milneria minima Dall, Am Naturalist, Sept., 1881, p 178.

[This curious little member of the Carditidæ was discovered in 1866 by the writer and found nestling on the backs of Haliotis, which afford a shelter for many small mollusks. The first speci-

mens came from Monterey; it was afterward found at Catalina Island, and Mr. Orcutt now sends it from San Diego and Todos Santos bay; some specimens from the last locality reach 7.5 mm in length and 6 in greatest breadth.

While examining some dry specimens sent by Mr. Henry Hemphill from San Diego some years since a very interesting feature was discovered which may be briefly described as follows:

Milneria is dicœcious like most lamellibranchs, and there is quite a difference in average size and proportional breadth, the male shell being always a little smaller and narrower than a female specimen of the same length. Both attach themselves to surrounding objects by a small byssus, for the passage of which a very slight gape exists between the ventral edges of the valves. The ventral surface when the valves are closed is nearly flat, an arrangement which has been brought about by the needs of the creature settling like some Arcas on a plane surface like a flat stone or Haliotis back. The male has the base or ventral surface a little striated. In the female, however, a much more elaborate arrangement is found. We have in fact a proper marsupium. The center of the base behind the byssal fissure is pushed upward into a little dome nearly equally participated in by each valve. The edges of the valves in the arch of the dome do not quite come together, so that the mantle is produced on each side, lining the hemispherical membranous sac, which separates into two halves when the valves open, is protected by the shelly dome above and by the flat surface of the stone (or shell upon which the parent rests) below. In this snug retreat it is probable the eggs are retained until hatched and the young for an indefinite period. The marsupium in all the specimens examined was well filled with young fry which had passed the embryonic stages.

A matter of interest connected with this discovery is the evidence it shows of the process by which the more complicated marsupium of Thecalia concamerata Ad. (see pl xxiv, fig 8) was formed. Hitherto the latter, as far as I recall at present, has been the only lamellibranch known in which the outer shell has been folded in to form a marsupium. In Milneria the outer layers of the shell within the dome remain, and even the epidermis seems to persist, indicating that after the young have left their shelter the enfolding processes of the mantle may be withdrawn into the body of the shell. In Thecalia, on the contrary, the base of the dome has become closed by the fusing of the outer layers of the shell, the interior of the dome, which has become altered in the process to a double funnel (one in each valve) is permanently covered by the mantle and secreted by those parts which produce only the inner layer of the valves, neither the outer nor the epidermal layers any longer taking part in its formation. The line of fusion from the two sides is plainly marked on the outside of the shell of the female Thecalia, the male, as in Milneria, being of the ordinary form. Both genera belong to the Carditidæ, and it is difficult not to conclude that in the two forms we have the early and the completed stages of a process which has for its end the safety of the immature individuals of the species.

I have written as if the function of the marsupium in Thecalia was certain; and indeed I was informed by the late Dr. William Stimpson that during his dredgings at the Cape of Good Hope he had discovered the eggs in the internal funnels of the female shell. This has always been surmised, but the fact of its having been actually observed has, I believe, not hitherto been made public in print. The specimen figured is one received from Dr. Stimpson in 1865. The interest attaching to the study of the reproductive

stages in either species can hardly be overestimated, and the attention of observers at the Cape and in California is hereby respectfully called to the matter. Either species would probably do well in an aquarium. Dall.]

322 Mytilus edulis Linne
San Diego bay; not numerous; probably introduced.

323 Mytilus bifurcatus .See 1949.
Abundant near high-water mark all along the coast.

324 Modiola recta Conr
False bay; rare.

325 Modiolaria denticulata Dall
San Diego (young).

326 Adula falcata Gld
La Playa and elsewhere in rocks.

327 Adula stylina Cpr
In rocks on beaches; not rare.

328 Lithophagus plumula Hanley
La Playa, with pholads; rare.

329 Lima dehiscens Conr
Under stones, living near high-water mark, False Bay, April, 1882. Also Todos Santos bay, but not found alive.

330 Hinnites giganteus Gray
This fine species we find abundant at La Playa, but elsewhere on the coast it appears rare, though not absent.

331 Placunanomia macroschisma Desh
Usually inhabiting deep water, attached to stones or bones of whales. Rarely collected.

332 Platidia anomioides (Scacchi) Costa var?
Terebratula anomioides Scacchi, Phil Moll Sicil, ii, p 69, pl xviii, fig 9, 1884.
[Mediterranean; North Atlantic; Florida Strait; San Diego, Cal., and Todos Santos bay, Orcutt.
The shells which I refer to the above species are in general like those from the Mediterranean. The differences are such as might result from the habitat or place of attachment of the shells. All the Californian specimens have the larger valve flat, with faint ridges radiating from the umbo and becoming obsole e before reaching the margin. The hæmal (or dorsal) valve is convex, and the foramen is often anteriorly angulated, though sometimes round. In all the specimens the part of the foramen included in the hæmal valve is larger than that included in the neural valve. The apophyses are similar to those of Mediterranean specimens. I have from the Caribbean sea a specimen similarly radiated, and for this form perhaps we may apply the varietal name radiata.
The special interest attaching to these little brachiopods arises from the fact that this is the first time they have been reported from the Pacific. The San Diego specimens were evidntly from the beach; though perfect, they were a little bleached. The single specimen from Todos Santos bay, though dry, contained the remains of the soft parts. D.]

333 Chioaera leonina

Tryon gives this name as Chiorhaea according to Yates; appears in Cooper's list as Chioraera; Yates spells the name as Chioraea leontina, and says Gould's original description and Cooper's agree. Yates also cites J. W. Fewkes, Essex Inst. bull. xxi, 1889. One specimen was dredged in the Santa Barbara channel at 20 fathoms by Dr. Cooper.

Animal wholly translucent, pale yellow, the variations marked only by a darker shade; form of head nearly conicle, the apex anterior, forming an angular roof above the anal opening; branchia processes 5 on each side, larger than represented in Gould's figure (Mollusks and shells, U. S. Expl. Exped.), imbricated and decumbent; length 2.75, height 1 inch.

Type locality: Vancouver Island, British Columbia.

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334 Yates, Lorenzo Gordin

The mollusca of Santa Barbara county, Cal. Santa Barbara society of natural history bulletin 1:37-45.

New shells from the Santa Barbara channel. Same, pages 46-48, t 1 and 2.

Dr. Yates notes the following forms (Nos. 335-493), besides others previously listed herein.

335 Physa d'orbigniana Lea.

Santa Rosa Island, living and fossil.

336 Chiton (Mopalia) muscosa

Shumagin Islands; Baulines bay, Cal. (R. E. C. Stearns); San Diego, and Baja Cal. Santa Rosa Islands (Yates).

Synonym of Mopalia ciliata.

337 Chiton (Acantopleura) scabra

Synonym of Nuttallina scabra.

Vancouver Island to Todos Santos bay, Baja Cal.

338 Chiton (Ischnochiton) magdalensis

Synonym of Stenoradsia magdalenensis.

Santa Rosa Island, common (Yates), Monterey, Cal., to Magdalena Island, Baja Cal.

339 Chiton (Ischnochiton) cooperi

Balenas bay, to Santa Cruz, Cal. Santa Rosa Island (Yates).

340 Nacella incessa

Synonym of Acmaea incessa.

341 Nacella depicta

Synonym of Acmaea depicta.

342 Nacella paleacea

Synonym of Acmaea paleacea.

343 Fissurella (Glyphis) aspera

Synonym of Fissuridea aspera.

344 Trochiscus norrisii

Synonym of Norrisia norrisii.

Monterey bay (Berry); Santa Barbara and Islands (Yates); and abundant on kelp on the coast at San Diego, and south.

345 Vermiculus fewkesi

"Shell consisting of a long, brown, conical tube, marked with numerous unequal raised lines along its entire length; at the pointed end is a spire of 10 closely connected whorls, upon each of which is a sharp raised line below the central portion of the whorl; a less prominent raised line shows at the jointure with the next whorl below, and after the whorls separate another and still less prominent line is seen; on the upper portion of the whorl which in the turritelloid portion of the shell is covered, or merged into the line of contact of the different whorls above, numerous fine lines are seen between, and all are crossed by distinct lines of growth; as the shell increases in size the lower raised line, instead of the central one, becomes most prominent. The turritelloid portion of the single specimen found is 9 mm long, the aperture is circular, 3 mm in diameter, the entire length of the shell is 16 mm. One specimen found near Ellwood by Albert E. Yates."—Yates, Santa Barbara soc. nat. hist. bulletin 1:48 t2 f 8, 9.

Dedicated to Dr. J. Walter Fewkes.

346 Vertagus lordii

Shell shows a sculpture of 7 rows of nodules, the upper 2 of which are the largest and gradually decrease until the seventh row is scarcely perceptible to the naked eye; a row of indistinct nodules is apparent between the 2 upper rows, the spaces between all the rows of nodules otherwise occupied by fine striae consisting of from 8-12 or more fine lines, each alternate raised line being larger than the intervening one; the varical ridges in the imperfect specimen found are placed one at the aperture, and one at about two-thirds of the last whorl; lip more flaring than in V. gemmatus, a distinct parietal knob on the columella near posterior angle of aperture, which running along the junction of the whorls forms a well marked spiral line about 1 mm from the junction. Color a uniform yellowish white. Found near Ellwood, by Albert E. Yates.

Dedicated to Mrs. F. C. Lord.

347 Vertagus gemmatus

Carpinteria, Santa Barbara county, Cal. (Yates).

This shell is very constant in its characters, presenting a sharp straight outline, and a sculpture of 3 rows of nodules (of which the upper is the larger) with a double spiral line between."—Carpenter.

348 Scalaria gracilis

Santa Barbara Islands (Yates).

349 Scalaria subcoronata

Santa Barbara (Newcomb fide Yates).

Synonym of Scalaria hindsii var. subcoronata.

350 Scalaria tincta

Santa Rosa Island, and Carpinteria, Cal. (Yates).

351 Venus fordii

"Shell thick, solid, ovate, tumid, truncated at point, exterior light brown; beaks projecting to front of the shell, much elevated and curved, making more than half a turn forwards and inwards; lunule rough, much depressed, heart-shaped, bounded by an impressed line; ligament not large, but nearly hidden in the depression between the elevated beaks; surface with concentric rounded ridges and grooves, marked on the surface by minute concentric

laminae, about one third of a mm apart, forming a chalky covering to the shell; entire surface of shell is further marked by fine, but somewhat irregular radiating lines and corresponding depressions a little less than 2 mm apart; these lines are more distinctly shown on anterior portion of shell; margins finely crenulated; young shells are of a dirty yellowish white, and mature shells which have become divested of the chalky exterior are of a yellowish brown color, and together with the young shells are marked with 4 radiating rows of chocolate colored blotches. Size of largest shell in writer's collection 2 3-8th inch long, same height, and 2 inches in width."—Yates, Santa Barbara soc. nat. hist. bulletin 1:46 t1 f 1-5.

Dedicated to H. C. Ford, for many years president of the Santa Barbara society.

Type locality:—Santa Barbara channel, Cal.

Considered a synonym of Venus toreuma by some conchologists.

352 Lingula albida Hinds

Monterey, Cal., to Baja Cal. Santa Barbara in 28 fathoms.

Synonym of Glottidia albida.

353 Xylotrya setacea Tyron

Synonym of X. pinnatifera Blainville.

354 Pholadidea penita Conrad

Synonym of Penitella penita.

355 Pholadidea ovoidea Gould

Synonym of Penitella ovoidea.

356 Saxicava pholadis Linnaeus

In every sea? Straits of Fuca to Santa Barbara, Cal.; Alaska.

357 Glycimeris generosa Gould

Asia; Alaska; Budd's Inlet, Washington; San Pedro, Cal. Santa Rosa Island.

358 Cyathodonta undulata Conrad

Santa Barbara, Cal., to Gulf of Cal.

359 Neaera pectinata Carpenter

Vancouver Island to Catalina Island, Cal., 20-120 fathoms.

Nearly globular, about 12 prominent ribs; posterior end of shell drawn out into a small tube, so that each valve looks like a small dipper; 6 mm long.

360 Entodesma saxicola Baird

Vancouver Island to Monterey, Cal.; Santa Rosa Island (Yates).

Shell oblong or pear-shaped, bulging at hinge end, gaping beneath, and prolonged around the siphons into an irregular process consisting chiefly of epidermis; shell white inside.

361 Mytilimeria nuttalli Conrad

Vancouver Island to San Diego, Cal. Santa Rosa Island (Yates).

Shell very thin, white, an inch in diameter; generally found imbedded in masses of Ascidians, which form a protection to the delicate shell.

362 Solen sicarius Gould
Shell short, slightly curved, truncated in front, white, with a glossy yellowish epidermis.
Vancouver Island to San Quintin, Baja Cal. Japan.

363 Solecurtus californianus Conrad
Synonym of Tagellus californianus.
364 Variety Subteres Conrad
Considered as a distinct species by some authors.

365 Machaera patula Dixon
Synonym of Siliqua patula.

366 Macoma yoldiformis Carpenter
Straits of Fuca to San Pedro, Cal. Santa Rosa Island (Yates).

367 Macoma nasuta Conrad
Kodiak, Alaska to San Diego; Bodega bay, Santa Rosa Island (Yates).

368 Macoma inconspicua Broderip.
Arctic sea to Santa Barbara, on kelp (Yates).

369 Mera modesta Carpenter
Santa Barbara, Cal. (Newcomb).

370 Standella falcata Gould
Synonym of Spisula falcata.

371 Psephis lordi Baird. See 2188.

372 Psephis tantilla Gould
Straits of Fuca to San Diego, Santa Rosa Island; 25 fathoms.

373 Merethrix toreuma Gould
East Indies; Santa Barbara (Yates).

374 Tapes tenerrima See 2182.

375 Tapes staminea orbella Carpenter
In cavities of rocks at Santa Barbara (Yates).

376 Saxidomus gracilis Gould
Bodega bay to San Diego; Santa Rosa Island (Yates).
Considered as a synonym of Saxidomus aratus by some.

377 Liocardium substriatum major Yates
Santa Barbara; "a much larger and more handsome shell than the type."

378 Cardium blandum Gould
Ounga Island, Alaska; Monterey, and Santa Rosa Islands; Asia?

379 Cardium elatum Sowerby
Synonymy:—Liocardium elatum.
380 Venericardia borealis ventricosa Gould
Aleutian Islands; Catalina Island, in 30 fathoms.
Synonym of Venericardia ventricosa.

381 Lazaria subquadrata Carpenter
Synonym of Cardita subquadrata.

382 Verticordia ornata D'Orb
Shell pearly within, 4 mm high, nearly square in outline, from the beak near one corner run about 9 prominent ribs.
Santa Barbara (Yates); San Pedro, Cal.

383 Philobrya setosa Cooper
Santa Barbara (Yates); Cape San Lucas.

384 Leda hamata Carpenter
Santa Barbara, in kelp (Yates).

385 Janira dentata Sowerby
Santa Barbara (Newcomb).
Synonymy:—Pecten dentata Sowerby.

386 Ostrea concaphila Carpenter
Santa Barbara? (Yates); San Diego? Mazatlan to Panama says Dall.

387 Variety **Rufoides** Carpenter
A thin long variety of O. lurida, grown in a current.
Santa Barbara (Newcomb); San Diego.

388 Cabrilla occidentalis Fewkes
Santa Cruz Island, new genus (Yates, in Santa Barbara soc. nat. hist. bull. 1:41).

389 Dentalium hexagonum Sowerby
Santa Barbara (Yates); Mexico; China; East Indies.

390 Dentalium indianorum Carpenter
Vancouver Island (R. E. C. Stearns); Santa Rosa Island (Yates).
Synonym of Dentalium pretiosum Nuttall.
The Indians used to gather these shells for wampum. The Tusk-shell lives partly buried in sand, the small end down; length about one inch.

391 Acmæa crebrifilatum Carpenter
Yates records the typical form, and a variety, from Santa Rosa Island.

392 Leptothyra sanguinea Carpenter
Synonym of Leptothyra carpenteri.

393 Gibbula parcipicta Carpenter
Synonym of Margarita lirulata.
Santa Barbara, "southern limit" (Yates); Todos Santos bay (H. Hemphill).

394 Margarita acuticostata Carpenter
Bodega bay to Santa Barbara, "southern limit" (Yates).
Synonym of Margarita lirulata.

395 Rissoina purpurea Carpenter.
Synonym of Rissoa reticulata.
Santa Barbara, northern limit (Yates).

396 Rissoa acutilirata Carpenter.
Santa Barbara (Yates); San Diego.

397 Mangilia variegata Carpenter.
Monterey to San Diego.

398 Variety Nitens Carpenter.
Santa Barbara.

399 Dunkeria laminata Carpenter.
Santa Barbara, type (Yates); San Diego (var. B).

400 Chemnitzia chocolata aurantia Carpenter.
Synonym of Turbonilla aurantia.

401 Chemnitizia crebrifilata Carpenter.

402 Chemnitzia tenuicalata Gould.
Santa Rosa Island (Yates).

403 Chemnitzia torquata Gould.
Synonym of Turbonilla torquata.

404 Variety Stylina Carpenter.
Synonym of Turbonella stylina.

405 Chemnitzia virgo Carpenter.
Santa Barbara (Yates).

406 Nassa cooperi Forbes.
Santa Rosa Island (Yates).
Commonly considered as a form of Nassa mendica.

407 Muricidea fasceolata Hinds.
Santa Rosa Island (Yates).

408 Ocinebra lurida Middendorf.
Synonym of Muricidea lurida.

409 Argonauta argo Linne.
North latitude 43 degrees in Atlantic to Brazil—North to 35 degrees in Pacific—Santa Barbara channel, California. Santa Catalina Is.
The paper nautilus is sometimes found on the seaward side of Santa Cruz Island in large numbers (Yates).

410 Semele pulchra Sowerby.
Santa Barbara, California, to South America.

411 Leptothyra carpenteri Pilsbry.
Vancouver Island, British Columbia, to San Diego, California —Japan. See Nautilus, July, 1890.

412 Clathurella constricta Gabb.
Catalina Island, California, 80 fathoms; Yates records a variety from the Santa Barbara channel.

413 Chama pellucida Broderip.
Farallon Islands to San Diego—South America?

414 Amphissa corrugata Reeve.
Alaska to San Diego, California.
Yates records a variety from Santa Rosa Island.

415 Purpura triserialis Blainville.
Gulf of California to South America.

416 Monoceros lapilloides Conrad.
Monterey to Catalina Island, Cal.

417 Muricidea subangulata Stearns.
"Shell small, abbreviated fusiform, dingy white and marked spirally by an inconspicuous band formed of 3 reddish-brown lines more or less interrupted on the basal and the preceding volution; whorls 5, angulated above and on the basal whorl rounded below the angle, with a shallow sulcation beneath; surface covered with rounded and irregular costæ, which are inconspicuous or obsolete on the upper whorls; longitudinally marked with from 7-9 irregular rounded ribs, which at the edge of the angle, (which is sometimes carinated) are broken into angular or pointed knobs or blunt spines; aperture ovate, angulated above and white within; the outer lip with 5 or 6 tubercles internally; canal moderately prolonged, slightly curved and open in the two specimens before me. Dimensions of largest: Long. .89; lat. .41 inch. Habitat—San Miguel Island, off the southern coast of California, where the specimens from which this description is made were obtained Mr. W. G. W. Harford."—Robert E. C. Stearns, Cal ac pr 5:—t1, f 4 (7 Ap 1873).

418 Fusus ambustus Gould.
Gulf of California. Santa Barbara, Cal. (Yates).
San Diego, Cal.
Synonymy:—Ocinebra subangulata.

419 Odostomia gravida Gould.
Bodega Bay to San Diego.

420 Eulima thersites Carpenter.
Shell small, very short, whitish, arcuate, very much distorted, right margin of spire nearly straight, left strongly excurved; nuclear whorls decollated, remaining whorls 6, smooth, nearly flat, suture distinct, base strongly arched, aperture suboval, produced toward the right, peritreme continuous, heavily calloused, lip sinuous. Long. 5.25, long. spire 3.25, lat. 2.25 mm. Preeminent for aberration among the distorted Eulimidæ.—Carpenter.
Type locality:—Santa Barbara, Cal. (Jewett).—Monterey, Cal.

421 Opalia bullata Carpenter.
Santa Barbara, California. Cooper.

422 Cancellaria cooperi Gabb.
Monterey to San Diego, California.

423 Lamellaria stearnsiana Dall.
Monterey to San Diego, California.

424 Marginella jewetti Carpenter.
Monterey to San Pedro, California.

425 Nassa mendica Gould.
Sitaka to San Diego, California.

426 Bittium filosum Gould.
Sitaka, Alaska, to Monterey, Cal. Santa Rosa Island (Yates).

427 Variety Esuriens Carpenter.
Santa Barbara (Yates).
Synonym of B. esuriens.

428 Bittium asperum Gabb.
Santa Barbara, Cal., to Lower California. Santa Rosa Island (Yates).

429 Lacuna solidula Loven.
Circumboreal—Norway—Alaska to San Pedro, California.

430 Isapis obtusa Carpenter.
San Diego, Cal. Santa Barbara, at 20 fathoms (Cooper). Vancouver Island (G. W. Taylor). See Nautilus 24:112, On Tapes staminea.

431 Amphithalamus inclusus Carpenter.
Santa Barbara to San Diego, California.

432 Mitromorpha aspera Carpenter.
Monterey to Santa Barbara, California.

433 Crepidula aculeata Gmelin.
North Carolina to South America—Monterey, Cal., to Chili—Asia—Africa?

434 Hipponyx serratus Carpenter.
Monterey to Gulf of California. Santa Barbara, northern limit (Yates).
Synonym of Amalthea serrata.

435 Hipponyx antiquatus Linne.
All tropical and warm seas. Monterey, Cal., to Todos Santos bay, Baja Cal.
Synonym of Amalthea antiquata.

436 Hipponyx cranioides Conrad.
Synonym of Amalthea cranioides.
Santa Rosa Island (Yates).

437 Spiroglyphus lituella Morch.
Monterey to Cape St. Lucas.

438 Cæcum crebricinctum Carpenter.
Monterey to San Diego, Cal. Santa Barbara, 20 fathoms (Cooper).

439 Turritella cooperi Carpenter.
Santa Barbara to San Diego, Cal.

440 Volvula cylindrica Carpenter.
Santa Barbara to San Pedro, Cal.

441 Dendronotus iris J. G. Cooper.
Santa Barbara, Cal., in the channel on kelp (Yates).

442 Æolis barbarensis

"Rose-red, longer tentacles tipped with yellow, branchial ciliæ simple in 6 longitudinal rows, all short, the middle rows longest and tipped with blue, anterior tentacles 2, above the mouth, dorsal tentacles club-shaped, a white streak extending from the median line between them to the mouth. Length nearly an inch. Santa Barbara, Cal., 16 fathoms on a rocky bottom."—Cooper, Cal ac pr 3:59.

443 Calliostoma gloriosum Dall.

Monterey bay, Cal. Santa Barbara? (Yates). Pt. San Pedro, 12 miles south of San Francisco, Cal.

444 Calliostoma splendens Carpenter.

Monterey to Catalina Island. Santa Rosa Island (Yates).
May be only a form of C: supragranosum.

445 Calliostoma tricolor Gabb.

New Year Point to San Diego, Cal. Santa Rosa Island (Yates).

446 Galerus contortus Carpenter.

Santa Barbara and islands, California.
Synonym of Galerus mammillaris.

447 Phidiana iodinea

Cooper, Cal ac pr 3:60.—"One from Santa Barbara beach, agreeing with those from San Diego."

"Æolis (Phidiana?) iodinea: rich violet purple, narrow wedge-shaped, high in front, tapering to an acute point behind, slightly constricted in 5 parts of the body corresponding to divisions of the branchiæ. Foot very narrow, slightly expanded. Head obtuse, with 4 tentacles, the upper longer and turned upward, the lower deflexed. Two club-shaped, orange-colored appendages a little behind the upper tentacles. Branchiæ short in a double row, close together near the median line, their color, orange red. Length, 2½; breadth one-fifth, inches. On rocks, among algæ outside of San Diego bay—rare inside."—Cooper Cal ac pr 2:205.

448 Succinea rusticana Gould.

Tryon, Monog T M 24, t 2 f 19.

Elongate ovate, thin fragile, diaphanous, irregularly striate; spire elevated, acute, suture moderately impressed; whorls 3, not very convex; body long, oval, not inflated; aperture narrowly oval, three-fifths the entire length. Pale greenish or yellowish. Length 14, diameter 7 mm.

Living: Nevada; Vancouver Island, to Baja California.

449 Physa traskii Lea.

Shell very much inflated, somewhat oblique, striate, semi-transparent, very thin, pale chestnut color; spire somewhat produced, pointed at the apex; sutures impressed; whorls 6, the last one very large and very much inflated; aperture broadly expanded; outer lip acute, and within the margin brown-banded; columella impressed in the middle and furnished with a large fold. Length 9, diameter 12 mm. Los Angeles river, California. Santa Barbara (Yates).

450 Acmæa patina Eschscholtz.

Aleutian Islands to San Diego, Cal. Mazatlan.
Synonym of A. testudinalis fide Dall.

451 Pecten hastatus Sowerby.
North Pacific to Japan and Santa Barbara, Cal.

451 Variety **Hindsi** Carpenter.
Santa Rosa Island (Yates).
Synonym of Pecten Hindsi.
453 Pecten paucicostatus Carpenter.
Santa Barbara to San Diego.

454 Pecten latiauritus Conrad.
Monterey to San Diego, Cal.

455 Neaplysia californica J. G. Cooper
Santa Cruz to San Pedro, Cal. Santa Barbara (Yates).
Synonym of Aplysia californica.

456 Tornatina carinata Carpenter.
Santa Barbara to Panama.

457 Tornatina cerealis Gould.
Monterey to San Diego, Cal.

458 Cardium corbis Martyn.
Alaska to Santa Barbara—Kamtschatka.

459 Kellia suborbicularis Montagu.
England to Canary Islands and United States—Vancouver Island to Mexico—Panama? Mazatlan. Santa Rosa Island (Yates).

460 Modiola modiolus Linne.
Circumboreal—Arctic Sea to France and North Carolina—West coast to South America—Circumaustral? New Guinea? Yates considers Santa Barbara as the southern limit of this species, and as the northern limit of M. capax. R. E. C. Stearns considered M. Americana Leach, capax Conrad, and vulgaris Fiem., as synonyms.

461 Axinæa intermedia Broderip.
Monterey to San Diego—South America.
Synonym of Glycimeris intermedia.

461 Axinæa septentrionalis Middendorf.
Alaska, latitude 64 degrees, to British Columbia. Uramok Island; Sitka; Santa Barbara, fossil (Yates); Santa Rosa Island, southern limit (Yates).

463 Nucula tenuis Montagu.
Circumpolar—Finland to Scotland—Greenland to North Carolina—Arctic Sea to Santa Barbara, Cal. Japan.

464 Nitidella gouldii Carpenter.
Straits of Fuca to San Diego.

465 Neptunea (Chrysodomus) **Lirata** Martyn.
Kodiak Island to Straits of Fuca; Santa Barbara, young? (Yates).

466 Cerostoma foliatum Gmelin.
Vancouver Island; Santa Barbara (Yates).

467 Anachis penicillata Carpenter.
Synonym of Columbella penicillata.

468 Mera obtusa Carpenter.
Santa Barbara channel (Yates).

469 Chiton (Trachydermon) fallax Carpenter.
Dredged in the Santa Barbara channel, southern limit (Yates).

470 Odostomia avellana gouldii Carpenter.
Santa Barbara channel (Cooper).

471 Lacuna unifasciata aurantiaca Carpenter.
Santa Barbara channel; Catalina Island.

472 Standella planulata Conrad.
Synonym of Mactra planulata.

473 Serpulorbis squamigerus Carpenter.
Santa Barbara Islands; Todos Santos bay, often on Septifer bifurcatus.

474 Opalia crenatoides insculpta Cooper.
Santa Cruz; Santa Barbara.

475 Cerithiopsis tuberculata Mont.
Europe; Straits of Fuca; Santa Rosa Island (Yates). Catalina Island.

476 Cerithiopsis fortior Carpenter.
Santa Barbara; San Pedro, Cal.

477 Columbella carinata hindsii Reeve.
Neeah bay to San Diego, with typical form.

478 Columbella gausapata Gould.
Santa Barbara to San Diego.

479 Purpura canaliculata Duclos.
Alaska; Oregon; Santa Rosa Island.
Synonym of Purpura lima.

480 Purpura saxicola? emarginata Desh.
Monterey; Santa Rosa Island (Yates).
Synonym of Purpura lima emarginata.

481 Variety **Fuscata** Forbes.
Straits of Fuca; Santa Rosa Island.

482 Variety **Ostrina** Gould.
Bodega bay; Santa Barbara (Yates).

483 P. crispata septentrionales Reeve.
Santa Barbara, southern limit of this color variety.

484 Rupellaria lamellifera See 2186.

485 Mangillia interlirata Stearns.
Monterey; Santa Rosa Island (Yates); San Diego?

486 Clathurella affinis Dall.
San Miguel Island to Cape San Lucas.
Cal. ac pr 5:62.

487 Drillia torosa Carpenter.
Monterey to San Diego.

488 Variety **Nitens** Carpenter.
Santa Rosa Island (Yates).

489 Bivonia compacta Carpenter.
Washington; San Pedro, Cal.

490 Phasianella compta pulloides Carpenter.
Synonym of Phasianella pulloides.

491 Crepidula excavata Brod.
Sitka; Mexico; Peru.

492 C. navicelloides nummaria Gould.
Synonym of Crepidula Lessoni nummaria.

493 C. navicelloides explanata Gould.
Synonym of Crepidula Lessoni explanata.

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494 Dall, William Healey:
On some new or interesting West American shells obtained from the dredgings of the U. S. fish commission steamer Albatross in 1888, and from other sources. U. S. nat. mus. pr 14:173-191 t 5-7.
Contains notes or descriptions of the following forms, numbered 495-532.

495 Eupleura muriciformis Broderip.
Synonymy quoted:—Ranella muriciformis Broderip; R. plicata and triquetre Reeve.
Cerros Island; San Diego; Venezuelan coast of the Pacific.

496 Variety? **Unispinosa** Dall. Mazatlan.

497 Variety **Limata** Dall. Gulf of Cal.

498 Eupleura caudata Say.
Cape Cod to the Florida keys.

499 Variety **sulcidentata** Dall. Florida.

500 Nassa californiana
"Generally ventricose; cancellate; slightly tabulate on the upper portion of the whorls near the suture; where the revolving ribs cross the longitudinal ribs there occurs a considerable nodule; body whorl with about ten prominent revolving ribs and with about three less conspicuous at the base; the basal channel ceases just before reaching the columella; columella smooth without teeth or tubercles; outer lip strongly sinuate with the extreme edge crenate. Whorls of the spire about five. Ground color white; revolving ribs purplish brown; epidermis yellowish white; varieties occur with omission of color in some of the revolving ribs which gives a faint pattern of banding. Length 30 mm; width 11 mm; spire 10 mm."—J. J. Rivers, Zoe 2:70-82, f.

Synonymy quoted:—Schizopyra californiana Conrad; S. californica Gabb, non Conr.; Nassa Fossata Gabb, non Gould in toto.
Drake's bay, Cal., to Cerros Island.

501 Fusus kobelti Dall.
Monterey, Cal., to San Diego.

502 Fusus harfordi Stearns.
"(Chrysodomus?) Shell solid, elongate, regularly fusiform; spire elevated, whorls 6 or 7, moderately convex, slightly flattened (in outline) above, with a groove or channel following the suture; color, chocolate brown; surface marked by numerous narrow revolving costæ, which alternate in prominence on the body whorl, and longitudinally by fine incremental striæ, and on the upper whorls by obtusely rounded ribs of more or less prominence; aperture ovate, about one-half the length of the shell, polished, white and finely ribbed within; (the outer lip in perfect specimens is probably finely crenulated); canal short, nearly straight. Lon. 2.1; lat. .94 in. Number of specimens, 3; 2 mature, dead, 1 junior, fresh. Habitat—coast of Mendocino county, near Big Spanish Flat, California, where it was detected by Mr. Harbord."—Robert E. C. Stearns, Conchological memoranda No. 7 (28 Ag 1871); Cal ac pr 5:79 (7 Ap 1873). Dall, "extr Cal ac pr 19 Mr 1877;" U. S. na mu pr 14: 178, t 6.
Dall cites the Farallones Islands (Watkins), and says he has "little doubt that this is the shell called by Middendorf Tritonium Sabini, from Kenai; at least, there is no other shell of the coast resembling Gray's Fusus Sabini."

503 Fusus corpulentus Conrad.
In a nodule of Miocene sandstone from Astoria, Oregon. Similar forms were received from Dead Man's Island, near San Pedro, Cal.

504 Trophon triangulatus Carpenter.
San Pedro, and islands off the Cal. coast. Santa Cruz Island (Yates). Catalina Islands, in 90 fathoms (Cooper).

505 Trophon cerrosensis Dall. Cerros Island.

506 Cancellaria, crawfordiana Dall.
Drake's bay, near San Francisco, in 24 fathoms (J. S. Arnheim). San Diego.

507 C. cassidiformis Sby. Near Cerros Island.

508 C. obesa Hinds. Near Cerros Isl.

509 C. bullata Sby. Near Cerros Isl.

510 Tellina idæ Dall.
Long Beach, San Pedro, and Catalina Isl. Miocene of San Diego.

511 Clementia subdiaphana Carpenter.
See Marcia subdiaphana.

512 Terebratella occidentalis obsoleta Dall.
Off Cerros Isl.

513 Buccinum strigillatum Dall.
Off Guadalupe Isl., Baja Cal.

514 Buccinum taphrium Dall.
Off Akutan Isl., Alaska, in 167 fathoms.

515 Mohnia frielei Dall.
Off coast of British Columbia, in 876 fathoms.

516 Strombella middendorfii Dall.
Off Unimak Pass, Alaska, in 36-61 fathoms.

517 Strombella fragilis Dall.
Off Unimak Isl., Bering Sea, in 36 fathoms.

518 Strombella melonis Dall.
Off Unalashka Isl., Bering Sea, in 225 fathoms.

519 Chrysodomus ithius Dall.
"Shell slender, acute with 7 rounded whorls, distinct suture, surface sculptured only with lines of growth and of a pale purple brownish tint. Aperture moderate not flaring, canal short. Length 70, of aperture 32, breadth of shell 30 mm. U. S. Steamer Albatross, station 3202, off the coast of California in 382 fathoms. Extremely perfect young specimens show a few faint spirals occasionally."—Dall, U S Nat Mu pr 14:187. 24 Jl 1891.

520 Chrysodomus periscelidus Dall.
Off Akutan Isl., Alaska, in 72 fathoms.

521 Chrysodomus phœniceus Dall.
Off coast of British Columbia, in 238 fathoms.

522 Chrysodomus eucosimus Dall.
Off Unalashka Isl., Bering Sea, in 225 fathoms.

523 Chrysodomus (Sipho) hypolispus Dall.
Bering Sea, in 46 fathoms.

524 Chrysodomus (Sipho) acosmius Dall.
Off Unalashka Isl., in 400 fathoms.

525 C. (Sipho) halibrectus Dall.
Off Akutan Isl., in 351 fathoms.

526 Trophon (Boreotrophon) scitulus Dall.
Off Unalashka Isl., Bering Sea, in 225 fathoms.

527 Trophon (Boreotrophon) disparilis Dall.
Off coast near Gray's Harbor, Washington, in 52 fathoms.

528 Puncturella galatea? major Dall.
Off Akutan Isl., Bering Sea, in 43 fathoms.

529 Solemya johnsoni Dall.
Off coast of Baja Cal., in 1,005 fathoms.—Puget Sound to Panama, in 60 to 1,740 fathoms.

530 Cryptodon bisectus Dall.
Synonymy quoted:—Venus bisecta Conr., Conchocele bisecta

Gabb, and Thyatira? bisecta, Meek.
Off Port Orcnard, Puget Sound, Washington.

531 Calyptogena pacifica Dall.
A new genus and species, from off Dixon entrance, Alaska, in 322 fathoms.—Los Angeles, Cal. (Pliocene).

532 Limopsis vaginatus Dall.
Off Unalashka Isl., in 351 fathoms, and south of Urimak, in 80 fathoms.

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533 Dall, William Healey:
The species named in No. 494 are further noticed by the same author in U. S. nat. mus. pr 17:675-733, t 23-32. This includes many from the Hawaiian Archipelago, which we do not propose to mention here. But the West American forms not noted above will be mentioned under numbers 534-548.

534 Buccinum aleuticum Dall.
South of Unimak Isl., in 59 fathoms.

535 Buccinum ovulum Dall.
Amukhta Pass, Aleutians, in 248 fathoms, sand.

536 Chrysodomus insularis Dall.
Near Pribilof Islands, in 184 fathoms, muddy bottom.

537 Chrysodomus (Ancistrolepis) **magnus** Dal.l
Near Pribilof Islands, in 46 fathoms, sand.

538 Beringius frielei Dall.
Near Pribilof Islands, in 86 fathoms.

539 Beringius aleuticus Dall.
Aleutian Islands, in 248 fathoms, sandy bottom.

540 Frieleia halli Dall.
Off Gray's Harbor, Wash., and off San Diego. A new genus named in honor of James Hall.

541 Terebratulina caput-serpentis Linne.
Circumboreal? Finland to France. San Diego, Cal.—Japan.
Synonymy quoted—Terebratula unguicula Carpenter.
Straits of Fuca to San Diego, Cal., near low water to 20 fathoms, chiefly obtained by dredging, sometimes from a depth of half a mile. Shell ash colored externally, popularly called the snake's head lamp shell, described by Carpenter under the name Terebratula unguiculus. Upper tertiary rocks of Europe, etc. See Dall, U. S. Nat'l Mus. pr 17:719-720 t 32 f 2, 5 (1894). Southern part of Bering Sea.

Variety **unguicula** Davidson.
Mon Rec Brach pt 1:25 (1886) is treated by Dall as typical.

542 Terebratulina kiiensis Dall and Pilsbry.
Off Santa Cruz, Cal., in 240 fathoms. Bering Sea; Japan.

543 Laqueus californicus Koch.
Off San Pedro, in 30 fathoms (Oldroyd). Queen Charlotte Islands.

544 Variety **Vancouveriensis** Davidson.
Dall erects this into a species, L. Jeffreysi.

542 **Laqueus jeffreysi** Dall.
Synonymy quoted:—Frenula jeffreysi Dall; and Megerlia jeffreysi.
Aleutian Islands to a point off Estero bay, near San Luis Obispo, Cal.

546 **Terebratalia obsoleta** Dall.
Northwest from Cerros Isl., Baja Cal., in 58-113 fathoms.
Synonymy quoted:—Terebratella occidentalis obsoleta Dall.

547 **T. Transversa** Sowerby.
Aleutian Islands to Catalina Isl., in 10-230 fathoms. Oregon.
Synonymy quoted:—Terebratula and Terebratella transversa; Terebratula caurina Gould.

548 **T. occidentalis** Dall.
Off San Clemente Isl., Monterey, Catalina Isl.

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549 **Dall, William Healey:**
Scientific results of explorations by the U. S. fish com. steamer Albatross. U. S. nat. mus. pr 12:219-362.
Only the West American species mentioned will here be listed in numbers 550-563.

550 **Glottidia albida** Hinds.
Off the coast of Baja Cal. San Diego.
Synonymy:—Lingula albida Hinds.

551 **Crytodon barbarensis** Dall.
Off Santa Barbara Islands, in 276 fathoms in green mud.

552 **Lophocardium annettæ** Dall.
Off coast of Baja Cal., and near San Clemente Isl., in 25 fathoms.

553 **Cymatoica occidentalis** Dall.
Off Baja Cal., in 26 fathoms.
554 **Genota carpenteriana** Dall.
Snyonymy:—Pleurotoma (Surcula) Carpenteriana Gabb.
Monterey, Cal. (Gabb), south to Cerros Isl.

555 **Columbella permodesta** Dall.
Off Santa Barbara, Cal., in 276 fathoms.

556 **Buccinium viridum** Dall.
Off Santa Barbara Islands, in 414 fathoms.

557 **Chrysodomus amiantus** Dall. Off S. Barbara Isl., in 414 fms.
558 **C. Aphelus** Dall. Off S. Barbara Isl., in 414 fms.
559 **C. griseus** Dall. Off S. Barbara Isl., in 414 fms.
560 **Murex (Chicoreus) leeanus** Dall. Off Cerros Isl.
561 **Calliostoma platinum** Dall. Off S. Barbara Isl., in 276 fms.
562 **Turcicula bairdii** Dall. Off S. Clemente Isl., in 414 fms.
563 **Solariella oxybasis** Dall. Off S. Barbara Isl., in 414 fms.

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564 **Bartsch, Paul:**
New marine mollusks from the west coast of America. U. S.

nat mus pr 33:177-183.
Numbers 565-573 are described in this paper.

565 Seila montereyensis
Monterey, Cal., to Todos Santos bay, Baja Cal. (Hemphill).

566 Bittium (Stylidium) eschrichti icelum
Neah bay, Wash., Monterey, Cal. (R. E. C. Stearns).

567 B. Eschrichti montereyensis. Monterey, Cal.

568 Bittium esuriens multifilosum
Whorls 10, length 9.2, diameter 3 mm; 7 spiral keels between the sutures on the whorls of the spire.
Type locality:—White's Point, San Pedro, Cal. (Mrs. Oldroyd). Also from Monterey and Catalina Island.

569 Bittium tumidum
Type locality:—Monterey, Cal. (Canfield).

570 Bittium quadrifilatum ingens
Type locality:—Monterey, Cal.

571 Cerithiopsis cosmia
Monterey, Cal. south to Todos Santos bay, Baja Cal. (Stearns).

572 Cerithiopsis (Cerithiopsis) pedroana
"Shell small, slender, dark brown. Nuclear whorls 3, yellowish-white, smooth. Post-nuclear whorls strongly differentiated from the nuclear ones, showing the sculpture characteristic of the adult shell from the beginning. This sculpture consists of 3 equally spaced tuberculate spiral keels between the sutures, the posterior one of which is slightly smaller than the other two. These keels are separated by deep, rounded channels almost as wide as the keel. In addition there are many low, rather broad axial ribs, the intersections of which with the keel form the tubercles. About 20 of them occur upon the 1st, 22 upon the 5th, and 30 upon the penultimate post-nuclear turn. The connections between the tubercles, both spiral and axial, are about equal, inclosing deep, squarish pits. In addition to the above sculpture the entire surface is marked by fine spiral lines and lines of growth. Sutures strongly marked, constricted, showing the peripheral keel in the later whorl. Periphery marked by a broad, low, rounded keel. Another of equal width is located upon the middle of the base. The sulcus which separates these keels and the supraperipheral sulcus are of equal width; both are crossed by the weak continuations of the axial ribs, which gradually weaken as they pass toward the columella. The basal keel is separated from the columella by broad, shallow grooves. Aperture irregularly oval, decidedly channeled anteriorly, outer lip thin, rendered sinuous by the external keel; columella stout and somewhat twisted, with a strong callus on its inner edge that extends over the parietal wall."—Bartsch, U. S. nat mus pr 40: 335. Also 33:181-182.
Type locality:—Terminal Island, Cal—Point Abreojos, Baja Cal.

573 Metaxia diadema
Monterey, Cal., to San Diego, Cal. (F. W. Kelsey).

574 Bartsch, Paul:
West American mollusks of the genus Triphoris. U. S. nat. mus. pr 33:249-262. Treats of the species following under numbers 575-590.

575 Triphoris montereyensis
Type locality:—Monterey, Cal.

576 Triphoris pedroanus
Type locality:—San Pedro, Cal.

578 Triphoris carpenteri
Based on Triforis adversa Carpenter non Monagu.

577 Triphoris callipyrgus
Type locality:—San Pedro, Cal.
Type locality:—Neah bay, Washington (J. G. Swan).

579 Triphoris hemphilli
Type locality:—Point Abreojos, Baja Cal. (H. Hempbill).

580 Triphoris catalinensis
Type locality:—Catalina Island, Cal.

581 Triphoris stearnsi
Type locality:—Gulf of Cal.

582 Triphoris peninsularis
Type locality:—Point Abreojos, Baja Cal. (H. Hemphill).

583 Triphoris excolpus
Type locality:—Cape San Lucas, Baja Cal.

584 Triphoris panamensis. Panama.
585 Triphoris dalli. Panama.
586 Triphoris inconspicuus C. B. Adams. Panama.
587 Triphoris alternatus C. B. Adams. Panama.
588 Triphoris galapagensis. Galapagos Islands.
589 Triphoris chathamensis. Chatham Island. . . . . .
590 Triphoris adamsi. Off Chatham Island.

591 Macromphalina occidentalis
Paul Bartsch, in U. S. nat. mus. pr 32:233, figures and describes this from Point Abreojos, Baja Cal. (H. Hemphill).

592 Eulima ptilocrinicola
Described and figured by Paul Bartsch, in U. S. nat mus pr 32:555 t 53. Found on Ptilocrinus pinnatus, off British Columbia.

593 Bartsch, Paul
New mollusks of the family Vitrinellidæ from the west coast of America. U. S. nat, mus pr 32:167-176, figures. Describes the following, numbered 594-604.

594 Vitrinella oldroydi
Type locality:—Point Loma, San Diego, Cal. San Pedro. Point Abreojos, Baja Cal. (H. Hemphill).

595 Vitrinella eshnauri
Type locality:—San Pedro, Cal. (Mrs. Oldroyd).

596 Vitrinella alaskensis
Type locality:—Unalaska, Alaska (Dall).

597 V. (Docomphala) Stearnsi
Type locality:—Monterey, Cal.

598 V. (Docomphala) berryi
Type locality:—Off Del Monte, Monterey bay, Cal. (S. S. Berry). San Diego, Cal. (Mrs. Oldroyd).

599 Cyclostrema xantusi. Cape San Lucas.

600 Cyclostrema diegensis
Type locality:—San Diego, Cal.
601 Circulus cosmius. Ecuador.
602 Circulus cerrosensis. Off Cerros Island.

603 Cyclostremella californica
Type locality:—Long Beach, Cal. (Mrs. Oldroyd). Monterey, Cal. (Berry).

604 Scissilabra dalli
Type locality:—San Diego. Also from San Pedro, Cal.; Monterey, Cal.

605 Cooper, J. G.:
Catalogue of west North American and many foreign shells, with their geographical ranges. Printed for the state mining bureau of Cal., April, 1894. This catalog included all mollusca known at that time to inhabit West America from Sitka to Cape San Lucas. Numbers 606-1139 are herewith incorporated, as follows:

606 Acanthinula harpa Say.
Circumboreal?—south to Maine, Sweden, Siberia, (Alaska?)

607 Acanthochites avicula Carpenter.
Catalina Island, Cal.—20 fathoms. Monterey, Cal.

608 Acantopleura fluxa Carpenter.
Catalina and Santa Barbara Islands, Cal.

609 Acila castrensis Hinds.
Sitka, Alaska, to San Diego, Cal. Puget Sound, 8 fms. (F. L. Button.
Synonymy:—Nucula castrensis.

610 Acmæa atrata Carpenter.
Margarita bay to Cape St. Lucas, Baja Cal.

611 Acmæa dalliana Pilsbry.
Gulf of California.

612 Acmæa fascicularis Menke.
Margarita bay, Lower California, to Gulf of California.

613 Acmæa instabilis Gould.
Vancouver Island to Monterey, Cal. Sitka, Alaska.
614 Acmæa mesoleuca Menke.
Gulf of California (to Panama?) Mazatlan.

615 Acmæa pediculus Philippi.
Gulf of California to Acapulco, Mexico.

616 Acmæa pelta Eschscholtz.
Aleutian Islands to Santa Barbara, Cal.

617 Acmæa rosacea Carpenter.
Monterey to San Diego, California.
Synonymy:—Acmæa pileolus rosacea Cpr.

618 Acmæa testudinalis Muller.
Circumpolar—south to England, New York, and Sitka.

619 Acmæa triangularis Carpenter.
Balenas bay to Monterey, Cal.

620 Acroloxus nuttalli Haldeman.
Shell fuscous, oval, elevated, apex ¼ of the entire length from one end. Length 8, width 6.25, height 3 mm.
Living: Snake river, Idaho; Oregon; Washington.

621 Admete viridula O. Fabricius.
Circumboreal—south to Massachusetts and Vancouver Island.

622 Æolus crassicornis Eschscholtz.
Sitka, Alaska.

623 Æolis subrosaceus Eschscholtz.
Sitka, Alaska.

624 Alderia? albopapillosa Dall.
Sitka, Alaska.

625 Alexia myosotis Draparnaud.
Oval-elongate, thin, smooth and shining; spire produced, apex acute, suture distinct; whorls 7-8, slightly convex, the last about three-fourths of the total length of the shell; aperture long and narrow, lip thin, sometimes slightly dentate-ridged within, appressed at the base and slightly reflected over the minute perforated umbilicus. A sharp transverse tooth on parietal wall and a smaller one above it; columella folded. Dark horn color, sutures narrowly banded with red. Length 8, diameter 4 mm.
Living: Sea coast of New England to New York. Europe, (and Asia?).

626 Var. **setifer** J. G. Cooper.
Humboldt bay to San Francisco bay, Cal.

627 Amnicola dalli Call.
Mountain streams, Nevada.

628 Amnicola longinqua Gld.
Shell elongate ovate, horn colored, surface quite smooth; apex obtuse; whorls 5, well rounded; sutures deep, aperture elliptical, broadly rounded posteriorly; lip simple, copiously incrusting the pillar margin, which is profoundly arcuate; umbilical region nearly perforate. Length one-eighth, breadth one-tenth inch.
Living: Utah (Henry Hemphill).
Quaternary: Cienega Grande, Colorado desert (W. P. Blake). Lahontan basin, Lassen county, Cal., Nevada.

629 Amphissa bicolor Dall.

"Shell small, solid, pale with brownish bands and 6 convex whorls; nucleus eroded in the specimens; suture distinct, not appressed, whorls full, with 11-13 narrow rounded ribs extending nearly from suture to suture; spiral sculpture of numerous flattened strap-like cinguli separated by subequal channeled shallow interspaces; epidermis thin and yellowish; color of shell pale straw color with a brownish base and a brown band extending from the periphery half-way back to the suture; aperture about equal to the spire, the penultimate rib behind it a little swollen; pillar slender, polished white with little callus; canal wide, short, recurved; outer lip simple, slightly reflected; not lirate inside. Longitude of shell, 14; of aperture, 7.7; maximum diameter of shell, 8 mm. Habitat: Dredged by the U. S. Fish Commission at various places off the coast from Point Sur to San Diego, and in the Santa Barbara channel in depths varying from 124 fathoms at the south to 298 fathoms at the north, over a sandy or muddy bottom. The operculum is brownish and resembles that of A. vesicolor Dall. The brown coloration, though generally disposed in bands as described, is variable, and occasionally appears in a zigzag pattern on the pale ground, or generally suffused over the surface, or even maculated, as in Nitidella. The apex when perfect is probably moderately acute, but is more or less eroded on all the specimens."—Dall, U. S. Nat Mus pr 15:213, t 20, f Ag 1892.

630 Amnicola micrococcus Pilsbry.

Oasis Nye co., Nevada. Death Valley, Inyo co., Cal.

631 Amnicola protea Gould.

Melania exigua Conrad. Phila ac pr 7:269 (F 1855):—"Turreted; volutions 8, disposed to be angulate and somewhat scalariform above; cancellated, longitudinal lines wanting on the lower half of the body whorl; columella reflected; aperture elliptical. Length, one-fifth of an inch. Colorado desert, California (Dr Le Conte). The specimens are numerous and of a chalky whiteness, showing that they are all dead shells."

Living: Dos Palmas spring, Colorado desert, near Salton (Orcutt). Arizona.

Quaternary: Colorado desert (Orcutt).

The most numerous of all the fossil shells found on the desert, and though one of the smallest species, its numbers are so great as to exceed the others in bulk as well.

632 Amnicola turbiniformis Tryon.

Snake river, Idaho, to Truckee river, California.

633 Amphisphyra subquadrdata Carpenter.

California.

634 Amphissa undata Carpenter.

Catalina Island, California.

635 Amphithalamus lacunatus Carpenter.

San Pedro and San Diego, Cal.

636 Anachis coronata Sowerby.

Cedros Island, Lower California, to Panama.

637 Anachis subturrita Carpenter.

San Diego, Cal.

Synonym of Columbella subturrita.

638 Ancylus caurinus W. Cooper.
Living: Black river, Puget Sound, to Sierra Nevada mountains, Cal.
Considered by Tryon as identical with A. fragilis.

639 Ancylus crassus Hald.
Shell coarse, somewhat ponderous, ovate, elevated; lines of growth conspicuous; apex eroded, placed far back; anterior and lateral slopes convex, posterior slope steep and rectilinear. Color opaque chestnut-brown. Length 8, width 6.25, height 3 mm.
Living: Oregon (Nuttall).

640 Ancylus fragilis Tryon.
Shell very fragile, sides nearly parallel or slightly incurved in the middle, diverging anteriorly; ends rounded, apex elevated, acute, curved backwards, with about two-thirds of the shell anterior to it. Length 4, width 1.5, height 1 mm.
Living: Vallejo and coast region, California.

641 Ancylus kootaniensis Baird.
Shell ovate, ashy, concentrically striate, vortex anterior, obtuse, shining within. Length 9, width 6 mm.
Living: Kootanie and Spokane rivers, British Columbia.

642 Ancylus patelloides Lea.
Shell thick, elliptical, spotted, obliquely conical; striæ minute, crowded; apex submedial.
Living: Arroyo San Antonio (Trask); Santa Cruz; Canoe creek; San Francisco; upper Sacramento river, Cal. Oregon.
See Lanx patelloidea.

643 Anodonta angulata Lea.
Washingtonia, to Tulare county, Cal. Idaho. Montana.

644 Anodonta kennerleyi Lea.
British Columbia, latitude 49 degrees, and north. Lake Chiloniyuck, Washington.

645 Anomalocardia subimbricata Sowerby.
West coast, latitude 26 degrees?, to Peru, South America.

646 Aplysia californica Cooper, Cal ac pr 3:57.
"Form and external appearance as usual in the genus. Length 15, breadth 5 inches, height about the same. Color pale gray or greenish, becoming purplish on the side, folds of mantle with scattered white specks, from which an irregular network of brown lines extends over the rest of the body, interspersed with large brown blotches. Inner surface of mantle varied with alternating painted bars of white and dark brown interlocking together. Sole of foot black. Eyes very minute. Shell contained in the substance of the mantle caritaginous, translucent, trapezoidal or hatchet-shaped, margins rounded, slightly convex above, the nucleus or center in the old specimens distant from the posterior end or apex. Faint radiating lines diverging from the nucleus, crossed by an irregular network of darker lines, all ending abruptly at some distance from the margin, which has thus a wide, nearly transparent border. An accessory plate arises on the inner surface from the nucleus, spatulate in form and slightly raised. The 2 younger specimens have the clear border and accessory plate less developed, and very young ones do not probably show these characters at all, but resemble the typical Aplysia in the

form of the shell. On this account I am unwilling to constitute it a new genus, but propose to call it a sub-genus under the name of Neaplysia. San Pedro, Cal., July 25, 1893, on beach after a heavy blow; 3 specimens. Stomach was full of large fragments of algæ. Kept in water for some time, they were very slow and uninteresting in movements, showing no evidence of any means of defense, except in the exudation of a beautiful purple fluid from the mantle when handled."—Cp.

Monterey to Lower California.

647 Anomalocardia subrugosa Sowerby.
West coast, latitude 26 degrees?, to Panama.

648 Argonauta hians Solander.
South Atlantic ocean—in Pacific north to China.

649 Argonauta pacifica Dall.
Atlantic? and Pacific oceans. Catalina Isl.

650 Ariolimax andersoni W. G. Binney.
Alameda county, California (A. niger?).

651 Ariolimax californicus J. G. Cooper.
Sierra Nevada, latitude 39 degrees, to coast of California.—San Mateo Co., Cal.

652 Ariolimax columbianus Gould.
Vancouver Island to San Francisco bay, Cal.—Santa Cruz Island (var. stramineus).

Synonymy:—Cockerell's forms typicus, maculatus, niger and californicus maculatus; and Hemphill's var. stramineus (fide Pilsbry).

653 Ariolimax hemphilli W. G. Binney.
Alameda county, Cal.

654 Ariolimax hecoxi Wetherby.
Monterey county, California.

"Ariolimax columbiana, var. hecoxi.—I have received, at different times, numerous specimens, at every stage of growth, of a large Ariolimax, found at Santa Cruz, California, by Miss Laura J. F. Hecox. The class in the University dissected numerous individuals, working out the genitalia in detail. The most casual examination showed that these organs did not agree with any of Mr. Binney's figures, from dissection of various west coast species, and Mr. Binney, after a careful examination of the specimens, at different ages, with a study of the genitalia, unhesitatingly pronounces it a new species. For the present, however, I prefer to give it only the varietal name above assigned, until I have the opportunity of making a careful study of undoubted specimens of A. columbiana, and a systematic comparison of these parts. It may be the form referred to by Dr. Cooper as possibly new, in his review of Mr. Binney's Terrestrial Mollusks, vol. v., Proc. Phil. Soc., 1879."—A. G. Wetherby, Cincinnati society of natural history, J.

655 Assiminea californica J. G. Cooper.
Northern California. San Pedro.

656 Assiminea subrotundata Carpenter.
Vancouver Island to San Francisco bay. Neah bay, Wash. Monterey, Cal.

657 Astarte corrugata Brown.
Circumboreal?—south to Massachusetts. Sitka, Alaska.

658 Astarte esquimalti Baird.
Vancouver Island.

659 Astarte fluctuata Carpenter.
Catalina Island, California, 40-60 fathoms.

660 Astarte undata? Gould.
Nearctic?—south to New York and Vancouver Island.

661 Astralium inæquale Martyn.
Vancouver Island to Lower California.

662 Astralium (Uvanilla) regina Stearns.
Guadalupe Island, Lower California.

663 Astralium undosum Wood.
Monterey to Cape St. Lucas.

664 Atlanta peroni Lesueur.
Pacific ocean.

665 Axinæa subobsoleta Carpenter.
Vancouver Island to Santa Cruz, Cal.
Considered as var. of Axinæa septentrionalis by some authors.

666 Barbatia gradata Sowerby.
Santa Barbara to San Diego—Japan—Mexico to Peru, South America. See under Arca.

667 Barliæa haliotiphila Carpenter.
See under Barleeia.

668 Bela exarata Moller.
Arctic sea, North Atlantic, and Vancouver Island.

669 Bela excurvata Carpenter.
Straits of Fuca, Wash.

670 Bela fidicula Gould.
Vancouver Island to Puget Sound, Wash.

671 Bela tabulata Carpenter.
Vancouver to Puget Sound, Wash.

672 Bela trevelliana Turton.
Circumboreal?—south to British Islands and Vancouver Isl.

673 Bela violacea Mighels.
Nearctic—south to Massachusetts, and Vancouver Island, on the Pacific.

674 Berendtia taylori Pfeiffer.
Mountains near Muleja, Lower California.

675 Binneya notabilis Cooper.
Depressed, smooth and shining, epidermis extending beyond margin of aperture, translucent when young, but opaquely thick-

ened when old. Nuclear whorl with about 30 delicate transverse ribs. Pale brown. Diameter 12, height 3 mm.

Animal: color buff-gray, with rather large black dots mainly scattered along the radial grooves of the foot and in a line above the pedal grooves, the mantle maculated with black. Surface with rather coarse radial grooves and sparse reticulation; a fine groove median on tail above, not extending to the foot; foot margin narrow, closely and evenly crenate; sole unicolored grayish, rugose and distinctly tripartite. Alcoholic specimens measure 10-20 mm long.

Santa Barbara Island, Cal.; Guadalupe Island, Baja Cal. (G. W. Dunn).

On the mainland near San Quintin, under plants of Agave Shawii, Baja Cal. (Orcutt).

676 Bittium attenuatum Carpenter.
Straits of Fuca to Monterey, Cal.

677 B. (Elachista) californicum
"Shell white, broadly elongate-conic; whorls rounded, falling off more abruptly toward the suture than the summit. The earlier whorls increase less rapidly in diameter, and are more evenly rounded. Base short, well rounded; aperture suboval, effuse and subchannelled anteriorly, with the posterior angle rounded; columella somewhat twisted and slightly revolute. The ornamentation consists of about 14-16 broad and low axial folds, which gradually become obsolete on the periphery and base, and on the whorls 3 or 4 impressed spiral lines, which are equally apparent on the ribs and intercostal spaces. This species occurs both recent and fossil in California. Recent shells appear more slender with fewer ribs, 12-14. The type is a fossil specimen from Dead Man's Island, off San Pedro, California, and has eight whorls which measure: long. 5.3, diam. 2.2 mm. A recent shell of 10 whorls measured 6, diam. 2.1 mm."—Dall & Bartsch, Nautilus 15:58-59 (S 1901).

678 Bittium fastigiatum Carpenter.
Santa Barbara, Cal.

679 Bittium munitum Carpenter.
Vancouver Island to San Pedro Cal.

680 Bryophila setosa Carpenter.
Vancouver Island to Mazatlan; Catalina Isl. (H. Hemphill).

681 Buccinum compactum Dall.
Vancouver Island and north.

682 Buccinum glaciale Stimpson.
Alaska—circumboreal? Kadiah Isl. (W. S. Fischer).

683 Buccinum morchianum Fischer.
Vancouver Island.

684 Buccinum undatum Linne.
North Atlantic to France and South Carolina. North Pacific to Straits of Fuca.

685 Buccinum viride Dall.
Santa Barbara Islands, deep water.

686 Cadulus aberrans Whiteaves.
Vancouver Island to Catalina Island, California.

687 Cæcum glabriforme Carpenter.
San Diego,? Cal. Mazatlan, Mexico.

688 Calliostoma eximium Reeve.
Lower California, both coasts.

689 Calliostoma supragranosum Carpenter.
Santa Cruz to San Pedro, Cal.

690 Calliostoma variegatum Carpenter.
Straits of Fuca, Washington, to San Pedro channel, Cal., in 20-60 fathoms.
See Dall, U. S. nat mus pr 24:552.

691 Calliostoma versicolor Menke.
San Pedro, California, to Mazatlan, Mexico.

692 Callista aurantia Hanley.
Lower California, both coasts.

693 Callista newcombiana Gabb.
Monterey to Catalina Island, California.

694 Callistochiton pulchellus Sowerby.
Monterey, California.

695 Callochiton fimbriatus Carpenter.
Islands of California. See also under Chiton.

696 Cancellaria circumcincta Dall.
Alaska to Vancouver Island.

697 Cancellaria goniostoma Sowerby.
Margarita bay, Lower California, to Panama.

698 Cancellaria modesta Carpenter.
Straits of Fuca, Washington.

699 Cancellaria unalaskensis Dall.
Alaska to Vancouver Island.

700 Cancellaria urceolata Hinds.
Magdalena bay, Lower California, to Central America.

701 Capulus tumens Carpenter.
Monterey to San Diego.

702 Cardita barbarensis Stearns.
California Islands; deep water.

703 Cardita borealis Conrad.
Circumboreal—Europe—south to North Carolina, and Catalina Island, California.

704 Cardita prolongata Carpenter.
Alaska to Monterey, California.

705 Carditamera subquadrata Carpenter.
See under Cardita.

706 Cardium annettæ Dall.
San Clemente Island, California, to near Margarita bay, Lower California.

707 Cardium centifilosum Carpenter.
Monterey to San Diego, 20-40 fms.

708 Cardium islandicum Chemnitz.
Nearctic—south of Massachusetts; Sitka, Alaska.

709 Cardium procerum Sowerby.
Margarita bay, Lower California, to Peru, South America.

710 Carinifex newberryi Lea.
Shell light horn color, turreted, very minutely striated, above and below acutely carinated, broadly and deeply umbilicated, whorls 5, flat above, sloping convex below; aperture large, subtriangular.
Living: Klamath lakes, Oregon, to Owens river and Clear lake, California. Nevada. Utah.

711 Cerithiopsis columna Carpenter.
Straits of Fuca to San Diego, Cal. Keep, W. C. 548.

712 Cerithiopsis tubercularis Montagu.
British Isles to Mediterranean sea and Florida.

713 Var. **tuberculata** Carpenter.
Straits of Fuca to San Diego.

714 Var. **tuberculoides** Carpenter.
Southern California to Mazatlan.

715 Chætopleura conspicua Carpenter.
See under Chiton.

716 Chætopleura gemmea Carpenter.
Monterey, California.

717 Chætopleura hartwegi Carpenter.
Monterey to San Pedro, California.

718 Chætopleura nuttalli Carpenter.
Alaska to Monterey, California.

719 Chione excavata Carpenter.
San Pedro, California, to Lower California.
Synonym of Venus undatella.
Chione is a subgenus of Venus, and the species may be found under either name.

720 Chione fluctifraga Sowerby.
San Pedro to Gulf of California.

721 Chione gnidia Broderip.
Margarita bay, Lower California, to Ecuador, South America.

722 Chione simillima Sowerby.
Monterey to Lower California.

723 Chione succincta Valenciennes.
Santa Barbara, Cal., to Ecuador, South America.

724 Chione undatella Reeve.
Catalina Island, California, to Gulf of California.

725 Chiton albolineatus Sowerby.
Ensenada, Lower California, to Acapulco, Mexico.

726 Chiton? brandti Middendorf.
Sitka, Alaska.

727 Chiton? fastigiatus Gray.

728 Chiton virgulatus Sowerby.
Margarita bay, Lower California, to Gulf of California.

729 Chlamydochiton amiculatus Pallas.
Alaska to Farallon Islands, California—Japan.

730 Chlamydochiton? vestitus Gray.
Circumboreal?—south to Labrador and Sitka, Alaska.

731 Chlorostoma ligulatum Menke.
Catalina Island, California, to Gulf of California.

732 Chlorostoma montereyi Kiener.
Balenas ba yto San Nicolas Island, California.
Synonym of Chlorostoma pfeifferi.

733 Chlorostoma pulligo Martyn.
Sitka to San Pedro, California.

734 Chrysallida cincta Carpenter.
South of Monterey, California.

735 Chrysallida pumila Carpenter.
South of Monterey, California.

736 Chrysodomus antiquus Linne.
Circumboreal—south to Massachusetts and British Isles—North Alaska, and to Hakodadi, Japan.

737 Chrysodomus behringi Middendorf.
North Alaska.

738 Chrysodomus castaneus Morch.
Sitka, Alaska.

739 Chrysodomus despectus Swainson.
Arctic ocean to Vancouver Island.

740 Chrysodomus fornicatus Gmelin.
Arctic sea to Vancouver Island.

741 Chrysodomus harpa Morch.
Alaska.

742 Chrysodomus kelletti Hinds.
North Pacific to Japan, and San Diego, Cal.

743 Chrysodomus kennicotti Dall.
Arctic sea to Vancouver Island.

744 Chrysodomus liratus Martyn.
Kodiak Island to Straits of Fuca.

745 Chrysodomus rectirostris Carpenter.
Straits of Fuca.

746 Chrysodomus tabulatus Baird.
Straits of Fuca to Catalina Island, California.

747 Chrysodomus tenebrosus Hancock.
Circumboreal—Lapland—Sitka, Alaska.

748 Chrysodomus verkruzeni Kobelt.
Vancouver Island.

749 Clathurella crystallina Gabb.
Catalina Island, California, 40 fms.

750 Cochliopa rowellii Tryon.
Near Baulinas bay, Marin Co., Cal. (Jos. Rowell), not Clear Lake (see Nautilus 20:10). Panama?
Shell depressed, wider than high, whorls 3½, regularly convex, rapidly enlarging; spire small, slightly elevated, apex acute, sutures well marked; base convex, except that region around umbilicus is flattened and inclined toward the axis, its outer boundary marked thus by an angle; umbilicus small, very distinct; aperture half ovate, labrum well rounded, thin, labium slightly rounded, thickened, elevated from body whorl forming an acute angle with the labrum above, and not impinging on the umbilicus. Color yellowish-green. Operculum paucispiral. Height 2½, larger diameter 4, smaller 3 mm.

751 Columbella baccata Gaskoin.
San Pedro, Cal.?—Cape St. Lucas and Gulf of California.
752 Columbella chrysalloidea Carpenter.
San Pedro to San Diego, Cal.
753 Columna ramentosa J. G. Cooper.
Base of Sierra de Lagunas, Lower California.
754 Var. **abbreviata**
High on Sierra Lagunas.
755 Crassatella marginata Carpenter.
Catalina Island; San Diego, Cal.
756 Crenella decussata Montagu.
Circumboreal—Finland to Scotland—south to North Carolina; Catalina Island, California, 10-40 fms.
757 Crucibulum tubiferum Lesson.
Santa Barbara, Cal., to Chili, South America.
758 Cryptobranchia concentrica Esch.
North Japan (Stimpson); throughout the Aleutian Islands, along the southern coast of Alaska (Dall); British Columbia; Puget Sound.
Dall, U. S. Na. Mus. pr 1:334 (1878).
759 Var. **instabilis** Dall.
Dall, U. S. Na. Mus. pr 1:335 (1878).
?Crytobranchia instabilis Dall Am J Conch 5:145 t 15 f 6 (1869).
Aleutian Islands (Dall).
760 Crytobranchia alba Dall.
Dall, Am J Conch 5:145 t 15 f 3a-4 (1868). U S Na Mu pr 1:335 (1878).
761 Crytochiton stelleri Middendorf.
Kamtschatka and Alaska to Monterey, Cal.
762 Crytodon flexuosus Linne.
Circumboreal—Finland to Canary Islands—North Pacific ocean to Catalina Island, California, 120 fms. England.
763 Crytodon sericatus Carpenter.
Vancouver Island to Catalina Island, California.
764 Cytherea (Amiantis) callosa Conr.
See No. 118.)

765 Cytherea crassatelloides Conrad.
Stearns, Nautilus 13:73 gives a list of synonymy.
See No. 116.
766 Cythna albida Carpenter.
San Pedro, Cal.—Mazatlan, Mexico?
Synonym of Cythna tumens Carpenter.
767 Daphnella clathrata Gabb.
Catalina Island, California, 60 fms.
768 Daphnella? fuscoligata Dall.
Monterey, California.
769 Daphnella variegata Carpenter.
Monterey to San Diego.
770 Darina declivis Carpenter.
Straits of Fuca to California.
771 Denronotus arborescens Muller.
Circumboreal—South to British Isles and Massachusetts—Sitka, Alaska.
772 Dendronotus purpureaus? Bergh.
Vancouver Island (and north?).
773 Dentalium pretiosum Nuttall.
British Columbia to California. Vancouver Isl. (R. E. C. Stearns).
Synonymy:—Dentalium Indianorum Cpr.
774 Dentalium rectius Carpenter.
Straits of Fuca.
775 Dentalium semipolitum Broderip.
San Diego to Gulf of California.
776 Dentalium tetragonum Sowerby.
Margarita bay, Lower California, to Ecuador, South America.
777 Diala acuta Carpenter.
Monterey to Santa Barbara Islands, California. San Diego? (R. E. C. Stearns).
778 Diala marmorea Carpenter.
Monterey, Cal., to Cape St. Lucas.
779 Diapahana debilis Gould.
Arctic sea to Northern Europe.
New Jersey, and Vancouver Island.
780 Diplodonta semiaspera Philippi.
San Pedro, Cal., to Gulf of California—West Indies.
781 Donax navicula Sowerby.
San Pedro? Gulf of California to Panama.
782 Depranostoma yatesi J. G. Cooper.
Synonym of Ammonitella yatesi Cp.
783 Drillia aurantia Carpenter.
Santa Barbara to San Pedro, Cal.
784 Drillia cancellata Carpenter.
Straits of Fuca.
785 Drillia hemphilli Stearns.
Southern California and Lower California.
786 Drillia incisa Carpenter.
Straits of Fuca to San Cruz, California.
787 Drillia montereyensis Stearns.
Monterey, California.
788 Drillia penicillata Carpenter.
San Pedro, Cal., to Lower California.
A form of Drillia inermis.
789 Emarginula bella Gabb.
Santa Cruz to Monterey, California.
790 Entodesma inflata Conrad.
Monterey, Cal., to Guayaquil, South America.

Synonym of Lyonsia inflata.

791 Eolidia pinnata Eschscholtz.
Sitka, Alaska.

792 Ethalia invallata Carpenter.
San Diego, California.

793 Eulima rutila Carpenter.
Similar to E. micans, but smaller, more slender, with 5 very fine varices, 3 on right, 2 on left side; more terete, highly polished, rosy and livid tinted; nuclear whorls as in micans; following whorls 10, elongate, very slender, base and aperture greatly prolonged; columella more twisted; lip very sinuous, a callus running backward above the suture, lip narrow. Alt. 6.41, diam. 1.83, length of aperture 1.91, breadth .83 mm. (Considered a form of micans by some authors.)
Type locality:—Monterey, Cal. (Cooper).—Scammon's Lagoon, Baja Cal.

794 Eulima gibba Folin.
North Carolina to Texas—West Coast?

795 Eulima polita Linne.
Circumboreal?—Vancouver Island to San Diego—Norway to Mediterranean sea—Eastern United States?

796 Eulima incurva Renieri.
Circumboreal?—Britain to Mediterranean sea—Vancouver Island.

797 Eulima compacta Carpenter.
Straits of Fuca.—Point Abreojos, Baja Cal. (Hemphill).
Shell small, stout, smooth, shining, pinkish white, opaque, outline of spire straight, conical; apex decollated; sutures linear, not ascending toward aperture; about 6½ whorls remaining, whorls of spire flat, body whorl oval; no varices; aperture ovate, outer lip sharp, not thickened, in profile nearly straight to periphery, then bent backward; columella rounded, slightly concave, parietal wall a little convex, forming a slight obtuse angle with the columella, parietal callus moderate. Alt. 6.7, diam. 2.45, length of aperture 2.77, breadth 1.27 mm.—Vanatta.
Considered a form of Eulima micans by some authors.

798 Eulimella occidentalis Hemphill.
San Diego, California.

799 Euthria dira Reeve.
See No. 2649.

800 Evalea gracilis Carpenter.
California.

801 Evalea tenuisculpta Carpenter.
California, San Diego.

802 Variety **incisa** Cpr.
San Diego (Hemphill).

803 Fluminicola fusca Haldeman.
Globose, smooth, whorls 5, rapidly increasing, sutures very deeply impressed; aperture large, broadly ovate, columella thickened. Color horn to light greenish. Height 10, diameter 8.6 mm.
Living: Sacramento river, California. Green river, Utah. Oregon. Wyoming. Dakotas.

804 Flabellina opalescens

"Æolis (Flabellina) opalescens:—Bluish white, pellucid, somewhat quadrangular, posteriorly wedge-shaped ending in a sharp point. Foot anteriorly with 2 short spreading appendages, laterally thin and flattened. Head short; tentacles 2, long, acute (the lower pair replaced by the appendages of the foot). Two erect, club-shaped appendages (dorsal tentacles) on the anterior part of the back, of an opaline color, with an orange stripe between them. Branchiæ in 5 pairs of fasciculi along the upper edges of back, each bundle of about 4 rows, longest above, their color yellowish, with a purple or blood-red spot near the end. A rosy tint often visible from the string of ova shining through the abdominal walls. This elegant species is numerous in San Diego bay, California, in the winter, living among the grass, and depositing its ova on any fixed object it meets with. Length, 1½; breadth, ¼ inch."—Cooper Cal ac pr 3:205.

Flabellina opalescens Cooper Cal ac pr:—"Dredged at Santa Barbara on a rocky bottom in a depth of 16 fathoms. A few also from the rocky shore of Santa Barbara Island, differing only in having the branchiæ olive, tipped with white."

Monterey, Cal.

805 Fluminicola hindsi Baird.

Kootanie river, Montana.

806 Fluminicola nuclea Lea.

Oregon and Northern California.

807 Fluminicola nuttalliana Lea.

Keep, West Coast shells, 63, f 50.

Shell globosely turbinate, thick, whorls 4 (apex generally eroded), convex, sutures well impressed; aperture large, widely ovate. Greenish, aperture blue within. Height 10, diam. 8.3 mm.

Living: British Columbia; Sacramento river, California.

808 Fluminicola virens Lea.

Shell oval, thick, apex eroded, whorls 4½-5, moderately convex; aperture narrow-ovate. Bright green, bluish within. Height 10, diameter 6 mm.

Living: Oregon and Northern California.

809 Fenella laminata Carpenter.

Santa Barbara to San Diego, Cal.

810 Fissuridea aspera Eschscholtz.

Sitka to San Diego, Cal.
Pilsbry, Nautilus 5:105.
Synonym of Fissurella aspera.

811 Fissuridea murina Carpenter.

Balenas bay, California, to Lower California.
Synonym of Fissurella murina.

812 Fusus barbarensis Trask.

Santa Barbara to San Diego, Cal.

813 Fusus luteopictus Dall.

Farallon Islands to San Diego, Cal.

814 Fusus polygonoides Lamarck.

Catalina Island, California?—East Indies.

815 Galerus fastigiatus Gould.
Vancouver Island to Lobitos, California.
Synonym of Galerus mammillaris?

816 Galerus mammilaris Broderip.
See No. 2638.

817 Gibbula rubescens Carpenter.
San Pedro, California.

818 Glyptostoma newberryanum Binney.
San Pedro, Cal., to Ensenada, Lower California.

819 Goniobasis acutifilosa Stearns.
Eagle lake, California.

820 Goniobasis bairdiana Lea.
Astoria, Oregon.

821 Goniobasis bulbosa Gould.
Columbia river, Washington.
822 Goniobasis circumlineata Tryon.
San Antonio creek, Marin county, to Pit river, California.
823 Goniobasis draytoni Lea.
Oregon to Napa county, California.
824 Goniobasis newberryi, Lea.
Des Chutes river, Oregon.
825 Goniobasis nigrini Lea.
Shasta to Napa county, California.
Dall, Nautilus 4:87, 88.
826 Goniobasis occata Hinds.
Shasta to Contra Costa county, California.
827 Goniobasis plicifera Lea.
Columbia river and branches, Oregon, to Montana.
Dall, Nautilus 4:87-88.
828—Variety bulimoides Tryon.
Hemphill, Nautilus 4:27.
829 Goniobasis rubiginosa Lea.
Oregon.
830 Goniobasis rudens Reeve.
Willamette river, Oregon, to Shasta and Plumas counties, Cal.
831 Goniobasis silicula Gould.
Rivers, Puget Sound to Shasta river, California.
832 Gundlachia californica Rowell.

Aperture suboval, obliquely expanded towards the left, posteriorly rounded, and wider anteriorly. Internal shelf reaching forward about one-fifth the length of the shell, its margin slightly concave and oblique. Dorsal surface convex, becoming somewhat keel-shaped towards the apex, which is strongly and obliquely deflected so as to make the right border nearly a straight line, while the expansion on the left projects nearly as far back as the apex at an obtuse angle. Structure corneous, with strong concentric lines of growth and faint radiating striæ. Color dark brown, opaque; inner surface shining and purplish, the plate white towards the edge, and in some specimens showing a thickened, white semicircle continuous with its margin across the arch of the shell. Length 4, width 2, altitude 1.5 mm.

Living: On stems of plants growing in stagnant ponds, California, often two or more on the back of another. Feather river to Merced river, west to coast.

833 Haliotis kamtschatkana Jonas.
Sitka, Alaska, to Monterey, Cal.—Asia, south to Japan.
834 Haliotis rufescens Swainson.
Bodega bay to San Nicolas Island, California.
"In 1874 or 1875 I collected several very fine living specimens, at extreme low tide on rocks near the mouth of San Tomas river, Lower California."—Henry Hemphill, Nautilus 4:59.
835 Halistylus pupoideus Carpenter.
Vancouver Island. Monterey to San Pedro, Cal.
836 Hemicardium biangulatum Sowerby.
Catalina Island, California, to Panama.
837 Hemphillia glandulosa W. G. Binney.
Puget Sound to Oregon; near coast.
838 Holospira arizonensis Stearns.
Dos Cabesas, Arizona; in a cave.
839 Hydrobia californica Tryon.
San Francisco bay, Cal. Vancouver Isl.
840 Ischnochiton radians Carpenter.
Monterey, Cal.
841 Katherina tunicata Wood.
Sitka, Alaska, to Monterey, Cal.
842 Kellia rotundata Carpenter.
Monterey to San Pedro, Cal.
Synonym of Kellia la perousii.
843 Kennerlia bicarinata Carpenter.
Catalina Island, California, 40-60 fms.
844 Kennerlia filosa Carpenter.
Vancouver Island to Straits of Fuca.
This proves to be the adult of Kennerlia bicarinata.
845 Kennerlia grandis Dall.
Unalaska to Puget Sound.
846 Labiosa undulata Gould.
San Pedro, California, to Gulf of California.
847 Lacuna glacialis Muller.
Circumboreal?—Sitka, Alaska.
848 Lacuna porrecta Carpenter.
Straits of Fuca to Monterey, California.
849 Lacuna vincta Montagu.
Circumboreal—Norway to British Isles—Alaska to Straits of Fuca.
850 Leda acuta Conrad.
Circumboreal—Rhode Island to West Indies—Vancouver Isl. to San Diego.
Synonym of Leda cælata.
851 Leda cuneata? Sowerby.
Synonym of Leda cæelata.
652 Leda fossa Baird.
Straits of Fuca, 10-15 fms.
853 Leda hamata Carpenter.
Santa Barbara, and islands, Cal.; Catalina Isl., 16-28 fms.
854 Leda minuta O. Fabricius.
Circumboreal—Greenland—south to Straits of Fuca.
855 Leptochiton cancellatus Sowerby.
Circumboreal?—British Isles to Spain—Vancouver Island?
856 Leptochiton punctatus Whiteaves.
Vancouver Island.
857 Leptolimnea kirtlandiana Lea.
Ohio—Lake Superior?? Utah—Washingtonia? Nevada?
858 Lepton dionæum Carpenter.
California.

859 Lepton mercœum Carpenter.
Monterey? San Diego, California.
860 Lepton rude Dall.
Vancouver Island to Monterey, Cal.
861 Leptothyra paucicostata Dall.
Santa Cruz to Monterey, Cal. A red color variety from San Diego.
862 Leucozonia cingulata Lamarck.
Cedros Island, Lower California, to Panama.
863 Lima orientalis A. Adams.
Monterey to San Diego—China.
864 Lima inflata Lamarck.
Mediterranean sea, coast of Europe, North Carolina to West Indies, and Western America.
865 Limatula subauriculata Montagu.
Arctic sea to Canary Islands and Florida—Alaska to San Diego, Cal.—Asia.
866 Limax (berendti?) hemphilli W. G. Binney.
Southern California. Lower California? Central America. (Northern slug a sub-species?)
867 Limax (gagates?) hewstoni J. G. Cooper.
Montana? Near San Francisco bay (introduced?) Los Angeles Co., Cal. (Mrs. Williamson).
868 Limax campestris Binney.
All of United States and Territories. Lower California?
869 Limax maximus Linne.
Palæarctic—San Francisco; introduced. Also naturalized in many countries.
Orcutt, Nautilus 4:68, records from San Diego.

870 Limnæa adelinæ Tryon.
Shell thin, semi-transparent, body whorl large, wide, convex; spire small, consisting of 5 convex volutions, attenuating rapidly to an acute apex, sutures impressed; inner lip thin, reflected, but not covering the umbilical fissure, which is narrow; columella twisted; color light horn, polished within the aperture, outer lip tinged with red within. Length 14, diameter 8.5 mm.
Living: San Francisco; San Diego (Orcutt), Cal. Tijuana, Baja California (Orcutt).

871 Limnæa emarginata Say.
Shell ovate-conic, thin, translucent, smooth; lines of growth very fine; whorls 5, very convex, suture deep; apex acute when present; aperture wide, more than ½ the length of shell; labium turned over, so as to form an umbilic; fold on columella obsolete; columellar depression deeply emarginate. Color light ocraceous.
Living: Maine; Lake Winnipeg; Washington?
872 Limnæa humilis Say.
Living: Throughout the United States. Baja California (Orcutt). Vancouver Island.

873 Limnæa lepida Gould.
Columbia river to Antioch, Cal.
894 Limnæa palustris Mueller.
Living: Circumboreal; Mountain lake, Cal.; New Mexico.
875 Liotia fenestrata Carpenter.
Monterey to Catalina Island, California.
876 Lithophagus attenuatus Deshayes.
Monterey, Cal., to South America.
877 Littorina rudis Donovan.

Circumboreal—Finland to Spain and New Jersey—Alaska —Asia?

878 Littorina sitkana Philippi.
Sitka, Alaska, to Monterey, Cal. Japan.
Aleutian Islands, Alaska (R. E. C. Stearns), banded variety.

879 Loligo stearnsii Hemphill.
San Francisco bay, California.

880 Lucina bella Conrad.
Monterey to Galapagos Islands.

881 Lucina borealis Linne.
Circumboreal?—Finland to Mogador, Africa—Alaska to Catalina Island, California?

882 Lucina filosa Stimpson.
Arctic sea to West Indies—Patagonia—Vanvouver Island—Circumaustral?

883 Lucina tenuisculpta Carpenter.
Vancouver Island, British Columbia, to Catalina Island, California—Mazatlan?, Mexico.

884 Macoma calcarea Chemnitz.
Nearctic?—Greenland—Vancouver Island.

885 Macoma carlottensis Whiteaves.
Queen Charlotte and Vancouver Islands.

886 Macoma edentula Broderip.
Arctic sea to Straits of Fuca—Japan.

887 Macoma edulis Nuttall.
Straits of Fuca to Balenas bay, California.

888 Macoma expansa Carpenter.
Straits of Fuca—Greenland?
Synonym of Macoma lata Desh.

889 Macoma obtusa Carpenter.
Vancouver Island to San Diego, Cal.

890 Macoma sabulosa Spengler.
Greenland to Vancouver Island.

891 Mactra californica Conrad.
Straits of Fuca to San Pedro, Cal.

892 Mangilia bicarinata Couthouy.
Circumboreal—south to Rhode Island, and Alaska—Northern Europe.

893 Mangilia crebricostata Carpenter.
Straits of Fuca, Washington.

894 Mangilia funebrale Dall.
Sitka, Alaska.

895 Mangilia hemphilli Stearns.
San Diego and southward.

896 Mangilia hexagona Gabb.
Monterey to Catalina Island, California.

897 Mangilia interfossa Carpenter.
Vancouver Island to Neeah bay, Washington.

898 Mangilia levidensis Carpenter.
Straits of Fuca to Bodega bay, California.

899 Mangilia merita Gould.
Southern California to Central America.

900 Mangilia sculpturata Dall.
Vancouver Island and north.

901 Mangilia striosa C. B. Adams.
San Pedro, Cal., to Panama.

902 Margarita canfieldi Dall.
Monterey to San Pedro, Cal.

903 Margarita helicina O. Fabricius.
Circumboreal—south to latitude 49 degrees.

904 Margarita lirulata Carpenter.
Sitka to San Diego, California.
905 Margarita pupilla Gould.
Ounalaska to San Pedro, Cal.
906 Margarita varicosa Mighels.
Nearctic—south to latitude 48 degrees. Canada, and Vancouver Island.
907 Marginella Pyriformis Carpenter.
Vancouver Island to San Diego.
908 Marginella varia Sowerby.
Santa Barbara to Mexico. West Indies.
909 Magerlia jeffreysi Dall.
Synonym of Laqueus jeffreysi.
910 Mesalia reticulata Mighels.
Nearctic—south to Maine, and Vancouver Island.
911 Mesodon armigerus Ancey.
Northern California to Monterey, Cal.
912 Microphysa conspecta Bland. (See 1206.)
Mountains of Colorado to San Francisco bay and Monterey, California.
913 Microphysa ingersolli Bland.
Kansas, Colorado, Oregon, Utah.
914 Microphysa lansingi. (See 2743.)
915 Microphysa pygmæa Draparnaud.
Northern Europe, Maine to Texas, Sierra Nevada to Vancouver Island and San Francisco, Cal.
916 Microphysa stearnsi (See 2744.)
917 Miralda quinquecincta Carpenter.
Southern California to Mazatlan. S. D., Cal.—H. Hemphill.
918 Milneria halioticola Dall.
Monterey, to San Diego, Cal.
919 Mitromorpha effusa Carpenter.
Straits of Fuca, Washington.
920 Modiola fornicata Carpenter.
Bodega bay to San Pedro, Cal.
921 Modiolaria corrugata Stimpson.
Circumboreal—south to Europe, North Carolina, and Alaska.
922 Modiolaria lævigata Gray.
Circumboreal?—Ounalaska to Washington.
923 Modiolaria marmorata Forbes.
Circumboreal—Finland to Canary Islands—Arctic sea to Straits of Fuca.
924 Modiolaria nigra Gray.
Nearctic?—Arctic sea to Scotland and North Carolina—south to Vancouver Island—Asia?
925 Modiolaria taylori Dall.
Vancouver Island.
926 Mopalia sinuata Carpenter.
Puget Sound to San Francisco.
927 Melaniella? eiseniana J. G. Cooper.
Sierra Laguna, Lower California, near Cape St. Lucas.
928 Muricidea gracillima Stearns.
Synonym of Ocinebra gracillima.
929 Muricidea interfossa Carpenter.
Synonym of Ocinebra interfossa.
930 Muricidea circumtexta Stearns.
Monterey to Santa Barbara Islands, Cal. San Miguel Isl.
Synonym of Ocinebra circumtexta.
931 Muricidea foveolata Hinds.
Santa Barbara, Cal., to Gulf of California.

932 Muricidea lurida Middendorf.
Sitka, Alaska, to Catalina Island, California.
Synonym of Ocinebra lurida.
933 Muricidea poulsoni Carpenter.
Synonym of Ocinebra poulsoni.
934 Muricidea salebrosa King.
Cedros Island, Lower California, to Galapagos Islands.
935 Muricidea squamulifera Carpenter.
Balenas bay, California, to La Paz, Baja Cal.
936 Mya arenaria Linne.
Circumboreal—Finland to British Isles—Greenland to South Carolina—south to Hakododi, Japan, and Sitka, Alaska. Naturalized in San Francisco bay, California.
937 Mya truncata Linne.
Circumboreal—Finland to British Isles—Greenland to Massachusetts—south to Okhotsk sea and Puget Sound, Washington.
938 Nassa complanata Powys.
Cedros Island, Lower Cal., to West Colombia, S. America.
939 Nassa insculpta Carpenter.
Catalina Island, California.
940 Natica lewisi Gould.
Vancouver Island to San Diego, Cal.

941 Natica marocriensis Gmelin.
Circumtropical—Southern Europe to Canary Islands—South Carolina to West Indies—Cedros Islands, Lower California, to Ecuador, South America—Polynesia—China—East Indies.

942 Natica pallida Broderip.
Circumboreal?—south to Catalina Island?, California—Okhotsk sea, Asia.

943 Navarchus inermis J. G. Cooper.
"One small specimen dredged among seaweeds in 10 fathoms, near the eastern shore of the 'Isthmus' of Catalina Island shows no variation from San Diego specimens."—Cp. Cal ac pr 3:58.
Under Strategus inermis:—"Vinous purple, ornamented with numerous rounded or oblong yellow spots: inner surface of enveloping folds, flesh-color. Edge of mantle and tail orange, with a narrow band of rich blue, forming a scolloped edging alternately blue and gold; a row of alternating spots of the same along the center of the ear-like processes. Under surface of tail deep purplish-blue. Whole surface perfectly smooth and shining. Eyes white with a black pupil. Length 3½, breadth ¼ inch. This beautiful animal inhabits muddy parts of San Diego bay, where I found it not uncommon in spring. It creeps among the grasses slowly and looks like a large caterpillar. Though without any apparent means of escape or defense, it seems little molested by other animals. As an object for study in an aquarium for the investigation of the metamorphoses it doubtless undergoes, from the egg to its perfect state, it would be highly interesting. It is more highly organized than any other genus of Opistho-branchiata, resembling Aplysia more nearly than any other, and probably carnivorous or a carrion eater."—Cp., Cal ac pr 2:202.

944 Nucula expansa Reeve.
Aleutian Islands to Kamtschatka and Sitka, Alaska.

945 Ocinebra circumtexta
Shell ovate, solid, sub-turreted, of 5 convex whorls. Upper

whorls cancellated; body whorl traversed by about 14 roughly-rounded revolving costae, more or less tuberculated at the intersection of the longitudinal ribs, and marked with fine incremental striæ. Last whorl ¾ the length of the shell; outer lip thickened internally denticulate, external edge crenulated. Columella excavated, light purple or purplish brown; canal short, open or closed in specimens of equal size. Umbilicus obsolete; surface of whorls with faint irregular longitudinal costæ. Color dingy white, with 2 interrupted black or dark brown bands. Lon. .85; lat. .5 in. Habitat—Monterey, California; Hemphill, Harford, Gordon, and Stearns, 16 specimens, mostly immature."—Robert E. C. Stearns, Conchological memoranda No. 6 (May 18, 1871); "Am J Conch 7:—(1871), with f."

"Not rare under stones at Portuguese Bend," near San Pedro, Cal., fide Mrs. Williamson (U S Na mu pr 15:21b).

946 Odostomia inflata Carpenter.
Vancouver Island to Monterey, Cal.

947 Odostomia nuciformis Carpenter.
Vancouver Island and Straits of Fuca.
Type locality:—Neeah bay, Wash.

948 Odostomia satura Carpenter.
Straits of Fuca to Monterey, Cal.
Type locality:—Neeah bay, Wash. (J. G. Swan).

949 Odostomia sitkensis Dall.
Sitka to Vancouver Island.

950 Odostomia straminea Carpenter.
Monterey to Lower California.

951 Odostomia tenuisculpta Carpenter.
Straits of Fuca, Washington. Monterey, Cal.

952 Ommastrephes giganteus Orbigny. See 2247.
Monterey bay, California, to South America.

953 Ommastrephes sagittatus Lamarck.
Nearctic?—south to New York and Vancouver Island.

954 Ommastrephes tryoni Gabb.
Coast of California.

955 Ommastrephes robustus Dall.
Alaska.

956 Onchidella borealis Dall.
Sitka, Alaska, to Straits of Fuca.
Taylor, Nautilus 5:92.

957 Onchidella carpenteri W. G. Binney.
Straits of Fuca? to Gulf of California.

958 Opalia borealis Gould.
Straits of Fuca to San Diego.

959 Opalia retiporosa Carpenter.
San Pedro and Catalina Island, California.
Synonym of Scala retiporosa.

960 Opalia spongiosa Carpenter.
Monterey, California.

961 Ostrea amara Carpenter.
San Diego, California?, to Panama.

962 Oscilla insculpta Carpenter.
Southern California.

963 Ovulum barbarense Dall.
Santa Barbara to San Pedro, Cal.

964 Ovulum formicarium Sowerby.
Southern California (to South America?).

965 Paludinella newcombiana Hemphill.
Humboldt bay, Cal.

966 Patula horni Gabb.
Arivapa and San Pedro Valleys, Arizona—Honduras?
967 Patula idahoensis Newcomb.
Idaho City to Montana.
968 Patula pauper Gould.
Alaska to Kamtschatka.
969 Patula solitaria Say.
Ohio to Columbia river, Washington.
970 Pecten alaskensis Dall.
Alaska to Vancouver Island.
971 Pecten caurinus Gould.
Puget Sound (to Santa Barbara?)—Japan.
972 Pecten floridus Hinds.
Monterey, Cal., to Lower California.
973 Pecten hindsi Carpenter.
Sitka, Alaska, to Santa Cruz, Cal.
974 Pecten islandicus Muller.
Circumboreal—Norway—south to Connecticut—to Hakododi, Japan, and Puget Sound, Washington, in Pacific.
975 Pedicularia californica Newcomb.
Farallon Islands, Monterey, Cal.
976 Penitella curvata Tryon.
Straits of Fuca to San Pedro, Cal.
977 Periploma discus Stearns.
Type locality:—San Pedro, Cal.
Stearns, U. S. natl mus pr 13:222, t 16 f 1-2.
978 Petaloconchus macrophragma Carpenter.
San Diego to Panama.
979 Phenacarion foliolatum Gould.
Puget Sound to coast of Oregon.
980 Phidiana iodinea J. G. Cooper.
Santa Cruz to San Diego, Cal.
981 Pholas crispata Linne.
Circumboreal—Arctic sea to British Isles and South Carolina —North Pacific ocean to San Diego, Cal. (Or.).
Synonym of Zirphœa crispata.
982 Pholas pacifica
"Shell, oblong, beaks two-fifths of length of shell from anterior end; anterior end of valves triangular, pointed; anterior dorsal edge of valves reflected and folded down on the umbos; lower anterior margin curved, forming a large elliptic-oval gape; posterior end of valves squarely rounded; shell dull chalky white, sculptured in concentric lines, which anteriorly are laminated and posteriorly become extinct; valves radiantly ribbed, which also become obsolete at the posterior end; at the intersection of the radiating and concentric lines the sculpture is pectinated; an area below the umbos, nearly or quite destitute of sculpture, which varies much in prominence in different specimens, accessory plate sub-lanceolate and bent down on the beaks, anteriorly prolonged over but not covering the ante-umbonal gape; interior of valves white enamelled; internal rib short, curved and flattened. Largest specimen, two and six-tenths inches in length, and one and five-tenths inches in height. Habitat—Alameda, San Francisco bay, California, where in some places it is common in sandy mud between tide marks. Numerous specimens collected by Messrs. Harford, Hemphill, Drs. Kellogg and W. P. Gibbons."—Robert E. C. Stearns, Conchological memoranda No. 7 (28 Ag 1871) Cal ac pr 5:—t 1, f 6, 6a, 6b, 6c (7 Ap 1873).
Mrs. Williamson (U S Na mu pr 15:183), reports 'three or four washed ashore with the tide" at San Pedro bay, California,

and adds "single valves not plentiful."

983 Phyllaplysia taylori

"The Rev. Dr. Geo. W. Taylor, of Wellington, British Columbia, has recently forwarded to me some marine slugs which were found on floating sea-grass near Nanaimo, Vancouver Island. An examination shows that these animals represent a genus, Phyllaplysia, not hitherto known except in Southwestern Europe, and an undescribed species. The animal in most respects differs very little from P. lafonti Fischer, the type of the genus. It is subtranslucent, smooth, of a uniform pale lemon-yellow color, very much flattened, resembling some of the Planarian worms. The specimens sent by Dr. Taylor are presumably somewhat contracted by alcohol, which may account for the form of the rhinophores and tentacles, which are short, conical, and strongly transversely wrinkled, but without tuberculation or color pattern, being of the same pale yellow as the rest of the body. The 'rainure' extending from the right tentacle to the brachial opening is a plain line barely perceptible; the branchial pit with 2 minute lobes is short and in about the same relative position as in P. lafonti. The body is much depressed and the margins thin, sharp and even. The eyes appear as conspicuous small black spots in front of the bases of the posterior tentacles. The general form is elongate oval, the ends of the rhinophores, unlike the tentacles, are blunt, and these organs are sulcate inferiorly as usual. The length of the largest specimen, as contracted in alcohol, is about 20 mm., and the breadth about 9 mm. I propose for it the name of P. taylori in honor of its discoverer. Of the 3 other species known, P. lafonti is pale green, with darker bands and numerous violet spots; P. depressa is green-buff, variegated with black; and P. limacina is of a dusky green. All of these are from western and southern Europe."—Dall Nautilus 14.91-92 (D 1900).

984 Physa ampullacea Gould.

Shell ovate-ventricose, shining, horn-colored; spire elevated, acute; whorls 6, last one inflated; suture decidedly impressed; aperture broadly ovate, five-sixths the length of the shell; lip thin, submargined with red; columella quite flexuous, covered with callus. Length 25, diameter 13 mm.

Living: Lake Oyosa, Washington; Oregon.

985 Physa blandi Lea.

Sub-alpine Sierra Nevada to Sacramento Valley. Marysville, Cal.

986 Physa carltoni Lea.

Near Antioch, middle of Sacramento Valley, Cal.

987 Physa costata Newcomb.

Clear lake, California.

988 Physa diaphana Tryon.

Lake county, California, to Cape St. Lucas.

989 Physa Gabbii Tryon.

Shell thin, closely striated by the lines of growth; body whorl inflated, its upper half flattened, so that the lip appears angulated in the middle; spire moderate, apex acute, whorls 6, convex, with distinct sutures. Color light corneous, very much polished within; lip margined with red. Length 25, diameter 13 mm.

Living: Mountain lake; Santa Ana river, Cal. Baja California.

990 Physa gyrina Say.
Northern United States and Territories—Oregon, Nevada; Strawberry Creek, Berkeley, Cal. (R. E. C. Stearns).

991 Physa heterostropha Say.
Northern half of United States and Canada—Oregon?

992 Physa humerosa Gld.
Shell subrhomboidal, solid, smooth and white; spire acute; whorls 5, tabulated; aperture one-half to two-thirds length of shell, rounded posteriorly; labrum expanded; columella scarcely plicate, callum hardly perforate. Length 15, diameter 9 mm.
Living: Colorado river; Pyramid lake, Nevada; Pecos river, Texas.
Quaternary: Near Carson, Nev. Very abundant on the Colorado desert in a "semi-silicified" condition.
Virtually only a distorted form of P. heterostropha; evidently the same form occurs living in the Los Palmas springs, Colorado desert.
993 Physa hypnorum Linne.
Circumboreal—south to New England, Ohio river, and Washingtonia.
994 Physa Lordi Baird.
Shell thin, corneous, tumid, gibbous, aperture large, outer lip acute; external surface very minutely decussated; whorls 6, first 2 minute, tinged with black, the last swollen, 4 times the size of the others. Length 19-25, diameter 12-18 mm.
Living: Lake Osoyoos, British Columbia. Washington. Humboldt lake. Nevada.
995 Physa malleata Tryon.
Montana and Northern California to Nevada.
996 Physa triticea Lea.
Oregon and Northern California.
997 Pilidium fulvum Muller.
Circumboreal?—Finmark to Ireland—Alaska—Asia.
998 Placiphorella latior Carpenter.
Monterey, Cal.
999 Placiphorella imporcata Carpenter.
Vancouver Island to Santa Barbara Islands, California.
Dall, U. S. na mu pr 1:306 (1878).
Mopalia imporcata Cpr. Phila ac pr 1865:59.
Puget Sound; Santa Barbara Islands, Cal.
1000 Placiphorella sinuata Carpenter.
Straits of Fuca to Monterey, California.
Dall, U. S. na mu pr 1:306 (1878).
Mopalia sinuata Cpr. Phila ac pr 1865:59.
Puget Sound; San Francisco bay, California.
1001 Placiphorella velata Carpenter.
Southern California. Vancouver Isl.
1002 Planorbis ammon Gould.
Shell large, discoid, subconic, delicately striate; left side broadly and deeply concave, showing 4 obtusely carinated whorls; right side concave, showing 2½ rounded whorls; aperture ovate triangular, sometimes quite expanded on each side; axis, five-eighths to one; diameter ¾ to ⅞ inch.
Living, Klamath lake, Oregon, Honey lake, Lassen county, Cal. Nevada, Colorado river.
Quaternary: Clenega Grande, Colorado desert.—T. H. Webb; W. P. Blake, Lahontan basin, Lassen county, California.

1003 Planorbis anitensis Cp.

"Shell (when held mouth downward) with the right side concavo-convex, the left flat (or slightly concave), the left margin forming a sharp carina expanded beyond the edge of shell, which is marked by a compressed line. Whorls 5, visible on both sides, uniformly flat on the left side, forming a concave umbilicus on the right, where their surface is founded. Mouth triangular, the right lip arched, the left nearly flat, the extremities joined to outer angle and to obtuse margin of umbilical cavity. Umbilicus half as wide as the shell; flat side of mouth one-fourth of diameter; greatest breadth (at mouth) over one-fifth of same; greater diameter 0.26, least 0.03 inch."—Cooper, Cal ac pr 2d ser, 3:341.

Type locality: Laguna at Santa Anita, Baja California, at an elevation of 100 feet, and 10 miles from San Jose del Cabo.

1004 Planorbis deflectus Say.

Great Slave lake to Virginia, Nebraska, and Montana.

1005 Planorbis exacutus Say.

Maine to Virginia, west to Kansas, Montana, and Vancouver Island.

1006 Planorbis gracilentus Gould.

Colorado desert, California?—Texas—Mexico.

1007 Planorbis hornii Tryan.

Shell of three convex volutions; aperture almost orbicular, not oblique, nor extending above or below the plane of the whorls; labrum slightly reflected, thickened within, its ends converging so as nearly to connect on the parietal wall; lines of growth fine and close. Color light horn. Diameter 21, height 7 mm.

Living: Fort Simpson, British America (George H. Horn). Grant's lake, California (W. M. Gabb).

1008 Planorbis opercularis Gould.

Shell dextral, much depressed, lenticular, with a prominent blunted keel at compressed line; tip sunken; beneath the periphery defined by a marginal, umbilicated for about one-third the breadth of the base, showing 3 volutions, convex, surface rather rude and indented, marked with irregular, coarse, much arcuated lines of growth, and here and there a few obscure, raised revolving lines; color dark chestnut brown, a little clouded; whorls above 4, slightly convex; suture well defined, impressed; aperture transversely subrhombic, lip above slightly acute-angled, beneath arched, lips embracing ¾ of that part of the whorl which is beneath the carina. Diameter 6, height 1.5 mm.

Living: Common in the waters of California. Vancouver Isl.

1009 Planorbis peninsularis Cp.

"Shell with both sides concave, the right with whorls rounded, their edge forming an obtuse margin, and the outer one partly enclosing the others so that it forms two-thirds the greater diameter of the shell. Whorls 5, visible on both sides, the rounded (or right) surface showing less of them than the other. Left (or umbilical?) surface nearly flat, deeply concave near middle, the umbilicus being over one-third of diameter. Mouth trapezoidal, very oblique, its lips curved, the right extremity attached near the concave spire, the left to the obtuse periphery of shell. Mouth one-third longer than wide; its breadth over one-third that of shell. Greater diameter 0.16, least 0.05 inch. Color brown, surface smooth."—Cooper, Cal. ac pr 2d ser, 3:342.

Type locality:—"With P. anitensis, in same laguna."

1010 Planorbis subcrenatus Cpr.

Shell tumid, very thin, horn-colored; whorls 6, rounded, sutures impressed; with sharp radiating, somewhat crowded and occasionally minutely crenulated ridges; aperture rounded, pari-

etal wall small, scarcely touching the penultimate whorl; labrum slightly deflected, fuscous within; umbilicus deep. Diameter 23, height 9 mm.

Living: Oregon (Nuttall). British Columbia to Baja Cal.

1011 Planorbis tumens Cpr.

Shell rapidly swelling, horn or reddish smoke-colored; whorls 4 or 5, with light waving striæ; sutures deeply impressed; on one side subangulate or subcarinate near the suture, on the other rounded; umbilicus very deep; aperture with a sinuous edge, one side standing out above, flattened below, the other flattened above, produced below, capacious and rounded; labrum very thin. Diameter 15, height 6.5 mm.

Living: Mazatlan, Baja California; San Francisco, Petaluma, and Southern California.

1012 Planorbis tumidus Pfeiffer.

Shell opaque, pale horn colored or smoky, densely and finely striated, umbilicated above, slightly concave below; whorls 5, convex, subcarinated on each side, rapidly increasing, separated by a deep suture; aperture oblique, lunate-rounded, somewhat kidney-shaped. Diameter 19, height 6 mm.

Living: Texas, Los Angeles, California. Nicaragua (T. Brydges). Guatemala.

1013 Planorbis vermicularis Gould.

Shell dome-shaped, minutely striated by growth, whorls 4, the last one deflected near the aperture, rounded at periphery, tip depressed, suture very deep, the whorls sloping toward it; base cup-shaped, exhibiting all the whorls. Aperture exhibiting a very oblique section of a cylinder; lip embracing about ½ the height of the last whorl and joined by callus. Height 1.6, diameter 5 mm.

Living: Oregon; California; Baja California (Orcutt).

1014 Plectodon scaber Carpenter.

Catalina Island, California, 40-60 fms.

1015 Pleurobranchus californicus

"Some time since Mrs. Oldroyd sent me 2 specimens of Pleurobranchus, from San Pedro, Cal., which I could not spare time to examine microscopically at the moment. I can now specify their chief diagnostic characters as follows: Animal when fresh of a waxen white, with a surface apparently smooth, or rather like the skin of an orange, not tuberculate, but, under a glass, showing obsolete distant pustules hardly raised above the general surface; body elongate-oval, the foot longer than the mantle behind. The gill short, its stem finely granular, not tuberculate, with 10 or 11 alternate short vanes, the whole adnate nearly to the tip, medially situated, with the contiguous genital orifices just in front of its anterior insertion and the anus just over the posterior insertion between the gill and the mantle. Eyes, rhinophores, muzzle, jaws and teeth, as described by Fischer (Man. Conch. xvi, pp. 301-2). Shell rather long and narrow, subrectangular, longitudinally obsoletely striate on the left side, obscurely obsoletely punctuate near the anterior edge, and covered with a very thin periostracum which reflects nacreous tinges of color. The shell itself is white and thin, with a small spiral nucleus; the left margin somewhat recurved, the central part moderately convex; the whole extends more than half the length of the body and measures 12 by 6.5 mm. This species differs from P. digueti Rochebrune in color, in the proportional size and number of pinnules of the gill, in having a larger and differently shaped shell, and in the position of the anal orifice. These remarks apply to the form described by Pilsbry anatomically; Rochebrune states that his species was scarlet

above and whitish below, but gives no anatomical data."—Dall, Nautilus 14:92-93.

1016 Pleurotoma hemphillii

"(Drillia) Shell small, smooth, slender, polished; spire long, subacute, rounded at apex; longitudinally marked with inconspicuous, oblique ribs, which are nearly obsolete on the body whorl; number of whorls 7, with well defined sutural line, and just below it a parallel impressed thread-like line; shell of an opaque dingy horn color; incremental lines fine, marked in some specimens with dingy white; mouth obliquely ovate, about one-third the length of the shell; labrium produced, anteriorly somewhat thickened; sinus sutural, deep, calloused; columella thickened at base; canal very short, somewhat produced and twisted; one specimen shows obscure, revolving, impressed lines below the swell of the body whorl; size quite uniform. Lon. .26; Lat. .09 in. Habitat—Los Todos Santos bay, Lower California, where several specimens were obtained by Mr. Hemphill, for whom I have named this well marked species."—Robert E. C. Stearns, Conchological memoranda No. 7 (28 Ag 1871); Cal ac pr 5:—t1, f3 (7 Ap 1873).

1017 Pleurotoma montereyensis

"(Drillia) Shell small, rather solid, elongate, slender; spire elevated, subacute; whorls, 7-8, moderately rounded; upper portion of larger volutions somewhat concavely angulated; suture distinct; color, dark purplish brown or black, surface covered with rather coarse, inconspicuous, revolving costæ, interrupted on the body whorl by rude incremental lines; middle of upper whorls and upper part of body whorl displaying 14-15 equidistant, longitudinal, nodose, slightly oblique ribs, which are whitish in the specimens before me (being somewhat rubbed on the larger whorls); on the smaller volutions of the spire a puckering at and following the suture suggests a second indistinct series of nodules; aperture less than half the length of the shell; canal short; terminal portion of columella whitish, slightly twisted; posterior sinus, rather broad rounded, and of moderate depth. Mean divergence about 26 degrees, Long. .67 in.; Lat. .24 in. Habitat—Monterey, California, where the single specimen in my cabinet was collected by Mr. Harford and myself in March, 1868. This shell, in its general aspect, resembles the sombre colored specimens of the Gulf of California and Panama."—Robert E. C. Stearns, Conchological memoranda No. 7 (28 Ag 1871); Cal ac pr 5:—t 1 f 2 (7 Ap 1873).

1018 Pleurotoma luctuosa Hinds

San Pedro, Cal., to Mazatlan.

1019 Pleurotoma tuberculifera Gray.

San Pedro, Cal., to Gulf of California.

1020 Polygyra harfordiana J. G. Cooper.

Big Trees of Mariposa county, California.

1021 Polygyra polygyrella Bland.

Montana and Idaho.

1022 Polygyra roperi Pilsbry.

Shasta county, California.

1023 Pomatiopsis intermedia Tryon.

Eastern Oregon and Nevada to Santa Cruz, Cal.

1024 Pompholyx effusa Lea.

Shell roundly gibbous, rather thin, effuse, reddish horn-colored or greenish, whorls 5, flattened above, concave below; aperture subrotund, dilated, white within. Length 6, diameter 8 mm.

Living: Pitt river, Modoc county, to Lake Tahoe, California. Pyramid lake, White Pine, Nevada (Henry Hemphill).

1025 Potomides californica Haldeman.
Balenas bay, California, to Mazatlan, Mexico.
1026 Potamides montagnei Orbigny.
Cedros Island, Lower California, to Chili.
1027 Pristiphora oblonga Carpenter.
San Diego, Cal.
1028 Phophysaon andersoni J. G. Copper.
British Columbia to Monterey, Cal.
1029 Prophysaon pacificum Cockerill.
Victoria, Vancouver Island.
1030 Prophysaon cæruleum Cockerill.
Washington—Oregon.
1031 Pisidium occidentale Newcomb.
Coast range counties, California, to latitude 23 deg. 30 min., Lower California.
1032 Pisidium insigne Gabb.
Uvas Pass, Kern county, California.
1033 Pisidium ferrugineum Morse.
Maine to Vancouver Island.
1034 Pisidium compressum Prime.
Canada to Vancouver Island—Pennsylvania to Utah, Nevada, and Eastern California.
1035 Pisidium abditum Haldeman.
Maine to South Carolina, Canada and west to California—Honduras, Mexico?, Lower California.
1036 Pisidium ultramontanum Prime.
Vancouver Island to Mono county, California.
1037 Psephis salmonea Carpenter.
Catalina Island, California; 30-40 fms.
1038 Psephis tellimyalis Carpenter.
Farallon Islands to Lower California, on Haliotis.
1039 Pterorhytis foliatus Gmelin.
Sitaka to Santa Barbara—Asia.
1040 Pterorhytis monoceros Sowerby.
Southern California and Western Mexico.
1041 Pterorhytis nuttalli Conrad.
Balenas bay to San Diego.
1042 Pterorhytis trialatus Sowerby.
San Pedro to Lower California.

1043 Ptychatractus occidentalis
"Shell elongated, fusiform, rather slender, whitish, traversed by narrow, revolving brownish threads and much wider intervening spaces; suture distinct, spire tapering; aperture oblong oval, about half the length of the shell; within white, polished; canal short, nearly straight; columellar obliquely, not strongly plicated; length about three-fourths of an inch. Habitat—near the Island of Attou, at the west end of the Aleutian Archipelago." —Robert E. C. Stearns, Conchological memoranda No. 7 (28 Ag 1871); Cal ac pr 5:—(7 Ap 1873):—"Habitat—near the Island of Nagai, one of the Shumagin Islands, where it was hooked up attached to a rock from a depth of 40 fathoms, by Captain Prime of the California Fishing Fleet; through the kindness of Mr. Harford to whom it was given, it is now in my cabinet."
1044 Rissoa æquisculpta Carpenter.
California to Galapagos Islands.
1045 Rissoa castanea Moller.
Arctic sea to North Carolina, and Vancouver Island.
1046 Rissoa compacta Carpenter.
Straits of Fuca.

1047 Rissoa? cooperi Tryon.
Monterey to San Diego.
1048 Rissoa? exilis Tryon.
Santa Barbara to San Diego.
1049 Rissoa filosa Carpenter.
Monterey, California, or southward.
1051 Rissoa purpurea Dall.
Monterey, Cal.
1$52 R. (Alvania) reticulata Carpenter.
Neeah bay, Washingtonia, to Galapagos Islands.
1053 Saxidomus brevisiphonatus Carpenter.
Straits of Fuca—Vancouver Island.
1054 Scala bellastriata Carpenter.
San Pedro to San Diego, Cal.
1055 Scala crebricostata Carpenter.
Monterey to San Diego, Cal.
1056 Scala cumingi Carpenter.
Monterey, Cal., to Panama.
1057 Scala gracilis? Sowerby.
San Diego, Cal.
1058 Scala hindsii Carpenter.
Bodega bay, Cal., to Panama.
1059 Scala indianorum Carpenter.
Straits of Fuca to San Diego, Cal.
1060 Scala occidentalis Nyst.
San Pedro, Cal.
1061 Scala retiporosa Cpr.
Catalina Island, California, 40 fms.
1062 Scaphella stearnsii Dall.
Ounalaska to Shumagin and Aleutian Islands.
1063 Selenites vancouverensis Lea.
Sitka, Alaska, to Eastern California and Lower California.
1064 Serripes greenlandicus Chemnitz.
Circumboreal—south to Massachusetts—in Pacific to Straits of Fuca, Washington.
1065 Serripes laperousi Lamarck.
North Pacific to Kodiak Island, Alaska.
1066 Siliqua patula Dixon.
Alaska to San Diego—Asia.
1067 Siphonaria brannani Stearns.
Santa Barbara Island, California.
1068 Skenea planorbis Fabricius.
Circumboreal—South to British Islands, Florida, and Alaska.
1069 Solariella perambilis Carpenter.
Vancouver Island, British Columbia, to Catelina Island, California—San Diego?
1070 Styliferina turrita Carpenter.
San Pedro, Cal.
1071 Scurria gigantea Gray.
Farallon Islands, California, to Lower California.
1072 Selenites simplicilabris Ancey.
Both sides of San Francisco bay, California.
1073 Sigaretus concavus Lamarck.
San Pedro, Cal., to Chili, South America.
1074 Siphonaria thersites Carpenter.
Sitka, Alaska, to Puget Sound, Wash.
1075 Sphærium occidentale Prime.
Vermont to Washingtonia—Canada.
1076 Sphærium spokani Baird.
British Columbia to Spokane river, Wash.

1077 Sphærium striatinum Lamarck.
Connecticut to Alabama; California. Montana.
1078 Sphærium sulcatum Lamarck.
Maine to Alabama and California.
1079 Sphærium tumidum Baird.
Sumass river, latitude 49 deg., Washington.
1080 Stenotrema germana Gould.
Vancouver Island to Western Oregon.
1081 Succinea hawkinsii Baird.
Tryon, Mong T M 28, t 2 f 31.
Very narrow, sub-cylindrical, thin, rugosely striate; spire very short, apex mamillary; whorls 2½, suture not impressed; body very long and narrow, the sides flattened, sub-parallel; aperture narrow ovate, two-thirds the total length, viewed from the base exhibiting the interior of the whorl to the apex, columella slightly folded above, with a callous deposit. Covered with a rather oblique dark yellow or orange epidermis. Length 1; diameter 5 mm.
Living: Washington; British Columbia.
1082 Succinea Nuttalliana Lea.
Tryon, Mong T M 26, t2 f 26.
Ovate conic, very thin, pellucid, shining, striate; spire acute, attenuate; whorls revolving very obliquely; aperture two-thirds the total length, ovate, broadly rounded below, angled above; columella without fold. Light horn color or greyish. Length 15, diameter 8 mm.
Living: Snake river, Oregon, to Clear Lake, California.
1083 Succinea oregonensis Lea.
Tryon, Monog T M 23, t 2 f 18.
Elongated oval, thin, diaphanous, shining, striate; spire acute, suture well impressed; whorls 3, well rounded; body seven-eighths and aperture two-thirds the total length; aperture ovate, one-third longer than broad, columella arcuate. Color deep orange or golden. Length 9, diameter 6 mm.
Living: Vancouver Island to Baja California.
1084 Succinea lineata W. G. Binney.
Tryon, Monog T M 23, t2 f 16.
Oblong ovate, irregularly wrinkled, between which are coarse, remote, revolving lines; spire acute; whorls 3, very convex; aperture ½ the length of the shell, oval; columella folded. Length 12, diameter 6 mm.
Living: Nebraska; British Columbia; northeastern California; Utah.
1085 Succinea sillimani Bland.
Tryon, Monog T M 24-25, t 2 f 21.
Oblong-ovate; thin, coarsely striate, shining; spire short,acute, suture impressed; whorls 3, convex, much flattened superiorly; aperture oblique, elongate oval, angular above, effuse at base, columella slightly arcuate, with a thread-like thickening above. White? Length 20, diameter 8.5 mm.
Living: Humboldt Sink, Nevada, to San Joaquin Valley, California; Washington.
1886 Succinea stretchiana Bland.
Tryon, Monog T M 19, t 2 f 5.
Globose-conic, thin, pellucid, shining, striatulate; spire short, obtuse, suture well impressed; whorls 3, convex, last inflated; aperture roundly oval, columella arcuate, slightly thickened. Greenish horn color. Length 6.25, diameter 5 mm.
Sub-alpine Sierra Nevada, California and Nevada, 4,000 to 6,500 feet altitude.

1087 Surcula perversa Gabb.
Vancouver Island to San Diego.
1088 Surcula tryoniana Gabb.
Var. of carpenteriana? (Fossil only?)
1089 Tapes grata Say.
San Pedro, Cal., to Ecuador, South America.
1090 Tapes laciniata Carpenter.
Monterey to Lower California.
1091 Tellina lamellata Carpenter.
San Diego, Cal., to Mazatlan, Mexico.
1092 Tellina modesta Carpenter.
Straits of Fuca, Washington.
1093 Tellina pura Gould.
San Diego, Cal., to Gulf of California.
1094 Tellina salmonea Carpenter.
Kodiak Island, Alaska, to Monterey, Cal.
1095 Terebra specillata Hinds.
San Pedro, Cal., to Gulf of California.
1096 Testacella maugeræ Draparnaud.
England and West Europe—Introduced in San Francisco, Cal.
1097 Thracia curta Conrad.
Straits of Fuca to San Diego, Cal. (W. S. Fisher).
1098 Thracia beringi Dall.
Behring Sea to Vancouver Island.
1099 Tornatina culcitella Gould.
Monterey to San Diego, Cal.
Keep, W. C., S 125 f 114.
1100 Tornatina harpa Dall.
Monterey, Cal.
1101 Tornatina inculta Gould.
San Diego, Cal.
1002 Trichoptropis bicarinata Broderip.
Arctic sea to Japan and Alaska.
1103 Trichotropis cancellata Hinds.
Sitka, Alaska, to Puget Sound, Washington.
1104 Triodopsis sanburni W. G. Binney.
Kingston, Idaho.
1105 Triodopsis hemphilli W. G. Binney.
Idaho and Montana.
1106 Triodopsis mullani Bland.
Cœur d'Alene mountains, Montaina.
1107 Triodopsis levettei Bland.
New Mexico, Arizona, and Mexico.
1108 Triodopsis harfordiana W. G. Binney.
Salmon river, Idaho.
1109 Triodopsis loricata Gould.
Shasta county to Mariposa and Alameda counties, California.
1110 Tritonium oregonense Redfield.
Ounalaska to Monterey and Japan.
1111 Tritonium pileare Linne.
Florida to West Indies—Gulf of California to Panama—Polynesia to Japan and Red Sea—Circumtropical?
1112 Trivia radians Lamarck.
San Pedro, Cal., to Ecuador, South America.
1113 Trivia sanguinea Gray.
Catalina Island, California, to Peru, South America.
1114 Turritella jewetti Carpenter.
Santa Barbara and southward.
1115 Tylodina fungina Gabb.
Santa Barbara Island to San Pedro, Cal.

1116 Vallonia cyclophorella Ancey.
Rocky Mountains to Northern Pacific Coast.
1117 Vallonia pulchella Muller.
Circumboreal—south to Mono county, California—introduced in Australia.
1118 Valvata sincera Say.
Mackenzie river to Minnesota (and Vancouver Island?). Utah.

1119 Valvata virens Tryon.
Shell turbiniform, of 4 well-rounded whorls; spire elevated, apex acute, sutures deeply indented, periphery almost angulated; umbilicus very wide; aperture oval or nearly round, the peristome merely touching the body above. Surface closely striate. Color brilliant to dark green. Height 5, diameter 5 mm.
Living: Clear lake, California. Utah lake.

1120 Velutina cryptospira Middendorf.
Sitka, Alaska, north and west to Asia.
1121 Velutina lævigata Pennant.
Circumboreal—south to Spain and Massachusetts—in Pacific to Monterey, Cal., and Kamtschatka, Asia.
1122 Velutina prolongata Carpenter.
Ounga Island, Alaska, to Monterey, Cal.
1123 Venus kennerleyi Carpenter.
Vancouver Island to Monterey, Cal.—Kamtschatka?
1124 Venus toreuma Gould.
Monterey to Catalina Island, California—"East Indies?"
Synonymy:—Venus fordi Yates.
1125 Vermetus compactus Carpenter.
Straits of Fuca to Peru, South America.
1126 Vermetus squamigerus Carpenter.
Monterey to Peru, South America.
1127 Verticordia acuticostata Philippi.
North Atlantic to West Indies—West America.
1128 Vitrifina pfeifferi Newcomb.
Sub-alpine Rocky Mountains and Sierra Nevada, California.
1129 Vivipara japonica Martyn.
Japan—imported into California for food.
1130 Volutharpa ampullacea Middendorf.
Behring sea to Sitka and Kamtschatka.
1131 Xylotrya fimbriata Jeffries.
North Atlantic and Pacific—universal—carried about by ships. England.
1132 Xylotrya pinnatifera Blainville.
Universal?—carried about by ships.
1133 Xylotrya stutchburyi Jeffries.
Universal?—carried about by ships.
1134 Yoldia amygdala Valenciennes.
Kodiak Island, Alaska, to Monterey, 40 fms., California.
1135 Yoldia impressa Conrad.
Santa Cruz to San Pedro, Cal.
1136 Yoldia lanceolata Sowerby.
Straits of Fuca, north—Atlantic? Japan.
1137 Yoldia limatula Say.
North Atlantic, south to North Carolina, and Alaska.
1138 Yoldia sapotilla Gould.
Arctic sea to North Carolina and Alaska.
1139 Yoldia thraciæformis Storer.
Nearctic—Alaska to Vancouver Island—Greenland to Massachusetts.

1140 Taylor, George W.:
Preliminary catalogue of the marine mollusca of the Pacific coast of Canada with notes upon their distribution. Royal soc of Canada, transactions, ser 2, 1:17-100. 1895.

Numbers 1141-1283, appear in Taylor's list, which we hereby incorporate in our own.

1141 Terebratulina unguicula D'Orbigny.
Synonym of Terebratulina caput-serpentis.

1142 Terebratella transversa Sowerby.
Synonym of Terebratalia transversa.

1143 Terebratula californica Koch.
Given as synonym of Laqueus californicus.

1144 Hemithyris psittacea Gmelin.
A common circumpolar shell, reaching as far south as Straits of Fuca.
Synonymy:—Anomia psittacea Gmelin.

1145 Ostrea virginica Gmelin.
Introduced into the Victoria Arm, and at San Francisco.

1146 Pecten rubidus Hinds.
"Usually considered as a variety of Pecten hastatus;" not rare near Victoria.

1147 Pecten (Pseudamusium) vancouverensis Whiteaves.
Forward Inlet, Quatsino Sound (Dawson); Departure bay (Taylor).

1148 Anodonta nuttalliana Lea.
Vancouver Isl., to Mexico; Willamette river, Idaho. The following varieties are not mentioned by Taylor:

1149 Variety **Californiensis** Lea. See Cooper, Zoe 3:23.

1150 Variety **Idahoensis** Henry Hemphill.
More oval than other forms of West American species; in proportions of its length and height and its rounded posterior outline, it resembles A. californiensis; in its breadth between valves, and the smaller and more pointed anterior end of the shell, and more especially in the less developed dorsal prolongation of the valves it resembles A. oregonensis; in color and lines of growth it agrees well with both; in the young state the shell is higher in proportion to its length, while the wings or dorsal prolongation of the valves are a little more produced. Length from anterior to posterior end 2¼, height from dorsal to ventral margin 1⅝, breadth between valves ⅞ inches.
Spokane river, above Post Falls, Idaho.—HH Zoe 1:328-9, 337, t 10 f 3-4.

1158 Miodon prolongatus Carpenter.
Stearns, U S Nat Mus pr 13:217, t 16 f 7, 9.
Taylor records this as rare at Victoria, Departure bay and at Salt River Spring Island; Whitgreaves reports it abundant at "Dolomite Narrows," etc., further north.

1159 Astarte compacta Carpenter.
Puget Sound (Kennerley), one specimen. Carpenter suggested that this may prove identical with A. compressa, a European species.

1160 Pythina rugifera Carpenter.
Puget Sound (Kennerley).

1161 Cardium nuttalli Conrad.
Largely consumed by Indians (Taylor).

1162 Cardium californiense Deshayes.
Ribs often nearly 50 in number, interior of shell frequently more or less tinted with rose; C. blandum is considered as a synonym, but Taylor speaks of two varieties, and some writer may decide they are distinct.

1163 Serripes centifilosum Carpenter.
Synonymy:—Cardium centifilosum Cpr., Adamsi Tryon, modestum Adams and Reeve, Richardsoni Whiteaves.
1164 Psephis tantilla Gould.
Synonymy:—Venus tantillus Gould.
Plentiful in sand near Victoria (Taylor). Type locality: Santa Barbara, Cal.
1151 Variety **oregonensis** Lea.
1151 Variety **wahlamatensis** Lea.
1153 Margaritana margaritifera L.
1154 Nucula castrensis Hinds.
"The commonest bivalve shell occurring in our seas."—Taylor. San Diego.
1155 Nucula lyalli Baird.
Taylor cites as a synonym of Nucula castrensis.
1156 Yoldia seminuda Dall.
St. Paul's Harbour Kadiak, 17 fathoms; Victoria Harbour (Taylor).
1157 Venericardia ventricosa Gould.
Stearns, U S Natl Mus pr 13:216, t 16 f 5-6. Alaska to Coronado Islands, Baja Cal.
Formerly treated as a variety of borealis.
A small, plump, rounded species, with 20-21 low, broad, radial ribs, with shallow narrower interspaces, crossed by flattish narrow concentric ridges, recalling basket work, and covered by a gray or yellowish-brown velvety periostracum, the hairs of which are disposed in radial lines.—Dall.
1165 Psephis lordi. See 2188.
Quite common, but can only be obtained by dredging in deep water (Taylor).
1166 Sphærium rhomboideum Say.
1167 Sphærium raymondi J. G. Cooper.
1168 Pisidium variabile Prime.
Taylor records the last 3 sp. as from Vancouver Island.
1169 Saxidomus squalidus Deshayes.
Largely used by Indians and others as an article of food (Taylor).
1170 Moera salmonea Carpenter.
1171 Angulus modestus Carpenter.
1172 Angulus obtusus Carpenter.
Considered as a variety of Augulus modestus.
1173 Angulus variegatus Carpenter.
1174 Angulus gouldii Carpenter.
Numbers 1170-1174 are now placed in Tellina.

1175 Peronæa bodegensis Hinds.
Synonym of Tellina bodegensis.
1176 Macoma lata Gmelin.
Synonymy:—Tellina calcarea Chemnitz, sabulosa Spengler, and proxima Brown, etc.
1177 Macoma inflatula Dall.
Doubtfully mentioned by Taylor.
1178 Semele rubropicta Dall.
Synonymy:—Semele rubrolineata Cpr., and others, not Conrad?
Vancouver Isl., Victoria, Queen Charlotte Isl., etc.
1179 Spisula falcata Gould.
1180 Spisula planulata Conrad.
The last two shells are also known as Mactra, and as Standella, which see.

1181 Tresus nuttalli Conrad.

"This is the clam of the North Pacific coast. It is very common on all our sandy beaches and is an important article of food among the Indians, who, in summer, collect and dry the animals for winter consumption. A little crab, Pinnotheres faba, Dana, finds its lodging within the valves of this shell."—Taylor.

1182 Cuspidaria pectinata Carpenter.

Synonymy:—Neæa pectinata Cpr., which see.

1183 Sphænia ovoidea Carpenter.

Puget Sound (Kennerley).

1184 Sphænia californica Conr.

Cited as a synonym of Crytomya Californica.

1185 Panopæa novegica Spengler.

Rare in Europe and America; Victoria (Taylor).

1186 Panopæa generosa Gould.

California, Puget Sound, Victoria. Lives at a depth of more than 2 feet in the sand.

1187 Penitella ovoidea

Based on Pholas ovoidea Gould.

1188 Xylophaga dorsalis

Based on Teredo dorsalis Turton, Conch. Dict. 185.

1189 Xylotrya bipinnata

Based on Teredo bipennata Turton, Conch. Dict.

Taylor reports all his specimens from Victoria as belonging to this species, none to X. fimbriata.

1190 Rictaxis punctocœlata

Based on Tornatella punctocælata Carpenter. Now placed in Actæon.

1191 Cylichna cylindracea

Based on Bulla cylindracea Penn. C. propinqua is cited by Taylor as a synonym. Departure bay, Queen Charlotte Isls., etc.

1192 Diaphana pellucida (See No. 779).

Synonymy:—Bulla hyalina Turton, Bulla debilis Gould, Utricula hyalina Jeffreys, Diaphana debilis.

1193 Haminea hydatis Linne.

Synonymy (fide Taylor):—Bulla hydatis L., Bulla vesicula Gould, and Haminea vesicula Gould and Carpenter.

1194 Selenites sportella Gould.

1195 Limax agrestis L.

1196 Limax hyperboreus Westerlund.

1197 Hyalina radiatula Alder.

1198 Hyalina milium Morse.

1199 Hyalina binneyanum Morse.

1200 Conulus fulvus Drap.

1201 Pristiloma lansingi Bland.

1202 Pristiloma stearnsii Bland.

1203 Prophysaon hemphilli Bland and Binney. . .

1204 Patula striatella

1205 Patula asterisca

1206 Punctum conspectum Bland. (See 912.)

1207 Punctum minutissimum Lea.

1208 Lysinœ townsendiana Lea.

1209 Mesodon columbianus Lea.

1210 Mesodon devius Gould.

1211 Pupa corpulenta Morse.

1212 Pupa simplex Gould.

1213 Ferussacia subcylindrica L.

1214 Onchidium carpenteri W. G. Binuey.

1215 Limnæa ampla Mighels.

1216 Limnæa nuttalliana Lea.

1217 Planorbis trivolvis Say.
All North America.
1218 Bela crebricostata Carpenter.
Synonymy:—Mangilla crebricostata Cpr.
1219 Pleurotoma vancouverensis E. A. Smith, Am Mag Nat Hist ser 5, 6:286 (1880).
1220 Admete Couthouyi Jay.
Queen Charlotte Sound; Victoria. Atlantic.
Synonymy:—Cancellaria couthouyi Jay and buccinoides Couthouy; not Tritonium viridulum O. Fabricius fide Dall, U. S. nat mus pr 9:298 (1886).
1221 Buccinum polare Gray.
1222 Buccinum percrassum Dall.
1223 B. cyaneum Brug. var. **Mœrchianum** Fischer.
Synonymy:—Volutoharpa mœrchiana Fischer.
1224 Volutoharpa mœrchiana Fisher. See 1223.
1225 Chrysodomus harfordi Stearns.
1226 Sipho angustus E. A. Smith, ann mag nat hist, ser 5, 6:287.
Cited as a synonym of Chrysodomus rectirostris.
1227 Astyris tuberosa Cpr.
Synonymy:—Amycla tuberosa Cpr.; Columbella t.
1228 Astyris carinata Hinds.
Synonymy:—Columbella carinata Hinds, gausapata Gld., and Hindsi Reeve. Tryon also included Nitidella Gouldii; which has also been named Columbella Dalli E. A. Smith.
1229 Trophon multicostatus Eschscholtz.
Synonymy:—Murex multicostatus Eschscholtz. Probably Trophon clathratus L., of Europe (fide Taylor).
1230 Trophon orpheus Gould.
Synonymy:—Fusus orpheus Gould.
1231 Trophon stuarti E. A. Smith.
1232 Trophon tenuisculptus Carpenter.
1233 Trophon dallii Kobelt.
Based on Trophon muriciformis Dall.
1234 Purpura crispata Chemnitz.
Synonymy:—Buccinum crispatum Chemnitz; Murex ferrugineus and lactuca Esch., etc.
1235 P. Lima Martyn.
1236 Eulima micans Carpenter.
Probably E. polita of Europe (Turbo politus L.). Victoria, south, usually found in sand at 10 to 40 fathoms.
The largest California species, generally bluish white below, lead above; apex often orange tinted, quite sharp, seldom decollated; sutures linear; whorls 13 or 14; lip concave above, convex below; several very fine impressed lines indicating former lips, irregular in position either on the right or left side or on both; alt. 11.4, diam. 3.2, length of aperture 3.2, breadth 1.9 mm.
Hemphill reports this at San Diego, Cal., on the sea-cucumbers (Holothurians).
1237 Turbonilla (Mormula) tridentata Cpr.
Synonymy:—Chemnitzia tridentata Cpr.
Type locality:—Monterey, Cal.
Puget Sound (Kennerley) to San Diego, Cal.
1238 Turbonilla (Mormula) lordi E. A. Smith
Synonymy:—Chemnitizia lordi E. A. Smith. Departure bay. Sitka harbor, Alaska.
1239 Turbinella chocolata Cpr.
Synonymy:—Chemnitzia chocolata Cpr.
1240 Odostomia satura Gouldii Carpenter.
1241 Triforis adversa Montagu.

Murex adversus Mont., is probably identical with Triphoris Carpenteri.

1242 Cerithiopsis munita Cpr.
Neeah bay (Swan), Victoria (Taylor).

1243 Trichotropis inermis Hinds.
Neeah bay (Swan).

1244 Alvania compacta Carpenter.
Based on Rissoa compacta Cpr.

1245 Alvania filosa Cpr.

1246 Alvania reticulata Cpr.

1247 Alvania castanea Moller.
Synonymy:—Rissoa castanea Moller.

1248 Paludinella castanea Cpr.
Neah bay (Swan).

1249 Amalthea cranioides Carpenter.
Hipponyx cranioides Cpr. is a synonym.

1250 Natica clausa Broderip and Sowerby.

1251 Lunatia pallida Broderip and Sowerby.
Synonymy:—Natica pallida B. & S.; Lunatia caurina and soluta Gld.

1252 Pachypoma inæquale Martyn.
Synonymy:—Trochus inæqualis Martyn; T. gibberosus Chem.

1253 Gibbula pulligo Martyn.
Synonymy:—Trochus puiligo Martyn.

1254 Cantharidus pupoideus Cpr.
Synonymy:—Fenella pupoidea Cpr. Halistyrus pupoides.

1255 Margarita vahlii Moller.
Puget Sound (Kennerley). ?

1256 Solariella cidaris Cpr.

1257 Solariella varicosa Mighels and Adams.

1258 Haliotis gigantea Chemnitz. Japan.
Pilsbry treats H. Kamtschatkana as a variety of this species.

1259 Puncturella cooperi Cpr.

1260 P. cucullata Gould.
Hanham, Nautilus 28:87, records from Maple bay, B. C.

1261 P. Galatea Gould.

1262 P. noachina L.
Atlantic. Pilsbry places P. Cooperi in this species.

1263 Rimula cucullata Gld. Is Puncturella c.

1264 Rimula galatea Gld. Is Puncturella g.

1265 Emarginula crassa J. Sowerby.
Queen Charlotte Islands (Dawson). Europe.

1266 Megatebennus bimaculatus Dall.
Synonymy:—Fissurellidea bimaculata Dall.
Rare in British Columbia (Taylor), and apparently everywhere.

1267 Lepidopleurus cancellatus Sby.
Synonymy:—Chiton cancellatus Sby.

1268 Trachydermon dentiens Gould.
Synonymy:—Chiton dentiens Gld., Trachydermon pseudodentiens Cpr.

1269 Trachydermon flectens Carpenter.

1270 Tonicella lineata Wood.
Synonymy:—Chiton lineatus Wood, Gen Conch 15 t 2, f 4-5 (1815).

1271 Tonicella submarmorea Middendorf.
Synonymy:—Chiton submarmoreus Midd.

1272 Tonicella marmorea O. Fabricius.
Synonymy:—Chiton marmoreus O. Fabricius, Faun Groenl 420 (1780).

1273 Cyanoplax hartwegii Carpenter.
Synonymy:—Chiton hartwegii Cpr.
1274 Cyanoplax nuttallii Carpenter.
1275 Ischnochiton interstinctus Gould.
Common on stones and dead shells at Victoria and elsewhere, in 10-30 fathoms.
1276 Ischnochiton reteporosus Carpenter.
1277 Ischnoradsia mertensii Middendorf.
1278 Ischnoradsia trifida Carpenter.
Victoria (Newcombe). Puget Sound (Kennerley).
1279 Nuttalina scabra Reeve.
1280 Mopalia ciliata Sowerby.
Sculpture variable, but strong; girdle thickly set with tubular hairs, varying from long, strong bristles to fine, soft pilæ; outside brown or blackish olive; inside bluish green and lilac; jugular and caudal sinuses narrow, the latter often not visible externally.
Shumagin Islands to San Diego, Cal.
1281 Mopalia lignosa Gould.
Synonymy:—Chiton lignosus, and vespertinus Gould.
Dall treats this as a subspecies of M. ciliata. Sculpture faint; inside greenish; sinus variable; hairs of girdle variable, but always softer and shorter than in well-marked ciliata, often hardly perceptible in dry specimens; external colors grayish or greenish, with streaks and flammules of brown and white.
Vancouver Island.—Monterey, Cal.
1282 Mopalia wossnessenskii Middendorf.
1283 Onychoteuthis fusiformis Gabb. Puget Sound? (Kennerley). Victoria?
1284 Dall, William Healey: and Paul Bartsch
The Pyramidellid mollusks of the Oregonian faunal area. U. S. nat mus pr 33:491-534, t 44-48. Includes the following, numbers 1285-1327.
1285 Turbonilla (Turbonilla) gilli
Type locality:—San Diego, Cal. (H. Hemphill).
1286 Variety **Delmontensis**
Type locality:—Off Del Monte, Monterey, Cal., in 12 fms. (S. S. Berry).
1287 T. (Chemnitzia?) montereyensis
Based on Turbonilla gracillima Gabb (not Chemnitzia gracillima Cpr.).
Type locality:—Monterey, Cal. (Cooper).
Shell large, 10 mm or more long.
1288 T. (Chemnitzia) **muricatoides**
Type locality:—Monterey, Cal. Shell not exceeding 5 mm in length.
1289 T. (Strioturbonilla) **vancouverensis**
Based on Chemnitzia vancouverensis Baird, Zool soc pr 1863, 67.
Whorls overhanging, shell stout.
Kadiak Island, Alaska; Monterey, Cal. (S.S.Berry, in 28 fms.).
Type locality:—Esquimalt Harbor, Vancouver Island.
1290 T. (Strioturbonilla) **Stylina**
Based on Chemnitzia? torquata stylina Cpr.
Shell slender, ribs sinuous, whorls strongly rounded, not overhanging.
Monterey, Cal., in 10 fms.; off Coronado Islands, in 50 fms.
1291 T. (Strioturbonilla) **serræ**
Type locality:—Off Del Monte, Monterey, Cal., in 12 fms. (S. S. Berry).
Whorls almost flattened, not overhanging; ribs straight, shell

slender.

1292 Turbonilla taylori

Type locality:—Departure bay, British Columbia (Taylor).

1293 Turbonilla berryi

Type locality:—Monterey bay, on sandy bottom, in 39 fms. Also off Catalina Isl., in 52 fms.

1294 Turbonilla lyalli

Type locality:—Banks Island, British Columbia (Taylor).

1295 Turbonilla victoriana

Type locality:—Victoria (Newcombe). Departure bay (Taylor).

1296 Turbonilla valdezi

Based on Turbonilla gibbosa Dall and Bartsch, not Chemnitzia gibbosa Cpr.

Type locality:—Monterey, Cal.

1297 Turbonilla newcombei

Type locality:—Victoria, Vancouver Island (Newcombe).

1298 Turbonilla oregonensis

Type locality:—Off Oregon, in 30 fms. Also off the Washington coast.

Numbers 1292-1298 belong to the subgenus Pyrgolampros.

1299 T. (Pyrgiscus) Canfieldi

Type locality:—Off Del Monte, Monterey, Cal., in 12 fms. (S. S. Berry).

1300 T. (Pyrgiscus) morchi

Type locality:—Monterey bay, Cal., in 29 fms. (S. S. Berry).

1301 T. (Pyrgiscus) Antestriata

Type locality:—Off Estero bay, Cal. Also off San Diego, Cal.

1302 T. (Pyrgiscus) eucosmobasis

Type locality:—Off Santa Barbara, Cal., in 53 fms. Also found off San Diego, Cal.

1303 T. (Pyrgiscus) tenuicula Gould.

Based on Chemnitzia tenuicula Gould. Santa Barbara, Cal. Occurs from Monterey, Cal., to Todos Santos bay, Baja Cal.

1304 T. (Pyrgiscus) castanea

Type locality:—Monterey, Cal.

1305 T. (Mormula) Eschscholtzi

Type locality:—Carter bay, British Columbia (Taylor).

1306 Odostomia (Chrysallida) cooperi

Type locality:—Monterey, Cal. (Dall).

1307 Odostomia (Chrysallida) astricta

Type locality:—Monterey, Cal. (F. L. Button).

1308 Odostomia (Chrysallida) montereyensis

Type locality:—Monterey bay, Cal. (S. S. Berry).

1309 Odostomia (Chrysallida) oregonensis

Type locality:—Queen Charlotte Island (Newcombe). Monterey, Cal.

1310 Odostomia (Ividia) navisa

Type locality:—Scammons Lagoon, Baja Cal. (H. Hemphill). Occurs north as far as San Pedro, Cal. (Mrs. Oldroyd).

1311 Variety **Delmontensis**

Type locality:—Monterey bay, Cal. (S. S. Berry).

1312 Odostomia (Iolæe) amianta

Type locality:—Point Abreojos, Baja Cal. (H. Hemphill). North to Monterey, Cal. (Taylor; Berry).

1312 Odostomia (Menestho) pharcida

Based on Mumiola tenuis Dall; Odostomia tenuis Cpr., not Jeffrey.

Type locality:—Queen Charlotte Island, British Columbia (Newcombe).

1314 Odostomia (Menestho) harfordensis
Type locality:—Port Harford, Cal. (Mrs. Merrihew).
1315 Odostomia (Menestho) exara
Type locality:—Pacific Grove, Monterey, Cal.
1316 Odostomia (Evalea) tillamookensis
Type locality:—Off Tillamook, Oregon in 786 fms.
1317 Odostomia (Evalia) angularis
Type locality:—Nanaimo, British Columbia (Taylor). Sitka, Alaska. Monterey bay, Cal. (S. S. Berry).
1318 Odostomia (Evalia) jewetti
Synonymy:—Odostomia inflata, in part.
Type locality:—Santa Barbara, Cal. (Jewett).
1319 Odostomia (Evalea) columbiana
Type locality:—Victoria, Vancouver Island (Newcombe). Pt. Townsend, Washington.
1320 Odostomia (Evalea) deliciosa
Type locality:—Monterey, Cal.
1321 Odostomia (Evalea) tacomaensis
Type locality:—Tacoma, Wash. (Fisher).
1322 Odostomia (Evalea) valdezi
Type locality:—Monterey bay, Cal. (S. S. Berry).
1323 Odostomia (Evalea) phanea
Type locality:—Monterey, Cal.
1324 Odostomia (Amaura) kennerleyi
Type locality:—Nanaimo, British Columbia (Taylor). Seattle, Wash. (O. B. Johnson).
1325 O. nuciformis avellana Cpr.
Type locality:—Neah bay, Washington.
1326 Odostomia (Amaura) montereyensis
Type locality:—Monterey, Cal.
1327 Odostomia (Amaura) Gouldii Carpenter.
Type locality:—Neeah bay, Washington.

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1328 Stearns, R. E. C.:
Description of a species of Actæon from the quaternary bluffs at Spanish Bight, San Diego, Cal. U. S. nat mus pr 21:297-299, f.
Describes the following:
1329 Actæon traskii
"Shell small, conical above, cylindrical, rather solid, opaque, somewhat glossy; sculpture consisting of fine spiral impressed lines or grooves, which become wider toward the base of the body whorl, making the sculpture of the lower portion of the shell lirate; part of the lirae are slightly grooved and in some cases show a tendency to run in pairs; the grooved lines are not quite regular in their relative distances, and some are deeper than others; the surface is otherwise sculptured by sharp, close-set, incremental lines; these latter are subordinate to the spiral sculpture and are more conspicuous on the lower part of the body whorl. Color dull cream-white, with (in the example before me) 2 obscure, broad, pale rufous bands on the body whorl. Spire short, obtusely conical. Whorls 6 (probably, apex in example is somewhat eroded); suture distinct, narrowly channeled. Aperture about two-thirds the length of the shell (not quite 9 mm), acutely angular above, rounded and effuse below, finely lirate and glossy within, with a thin glazing on the body whorl. Outer lip thin, simple. Columella short and flexuous, with a conspicuous fold, curving around the same and thickening the edge of the lip, which is moderately produced in the umbilical region. Length of shell (type), 24, of body whorl 19, breadth 12 mm."
Quaternary marl: San Diego, Cal. (Stearns, Homer Hamlin).

1330 Actæon punctocælatus Cpr.
1331 Variety **Coronadoensis**
Slender, more attenuated and delicate than the recent specimens, without the dark bands. Quaternary marl, Spanish Bight, San Diego, Cal. (Stearns).

1332 Dall, William Healey:
Synopsis of the recent and tertiary Leptonacea of North America and the West Indies. U. S. nat mus pr. 21:873-897.
Notes the following West American species, numbers 1333-1356.

1333 Solecardia eburnea Conrad.
Cape San Lucas to Panama.
Synonymy:—Scintilla Cumingi Deshayes, 1855.
1334 Sportella californica Dall, 1889. Monterey, Cal.
1335 Sportella stearnsii Dall, 1899. Gulf of Cal.
1336 Lepton umbonatum Cpr., 1857. Mazatlan.
1337 ?Erycina subquadrata Cpr., 1857. Mazatlan.
1338 Erycina compressa Dall, 1899. Alaska.
1339 Erycina rugifera Cpr., 1864. Puget Sound.
Synonymy:—Lepton rude; Pythina.

1340 Bornia pulchra Philippi.
Kellia pulchra Philippi, Zeitschr fur Mol 5:149 (1848). "Probably a Pythina, but unfigured."—Dall. "West America."
1341 Bornia retifera Dall.
"Shell thin, white, moderately convex, rounded, trigonal, nearly equilateral; beaks distinct, not high; surface polished, with faint incremental lines and minute close punctations whose interspaces give the effect of a fine netting; hinge normal, delicate; adductor scars rounded, high up; posterior basal margin very slightly crenulate. Lon. 12, alt. 9, dam. 4 mm. One left valve dredged by the U. S. Fish Commission at station 2900, in 13 fathoms, off Santa Rosa Island, California."

1342 Serridens oblonga Cpr.
Kelsey, Nautilus 15:144, San Diego, Cal., on Ischnochiton conspicuous.—San Pedro, Cal.
1343 Mysella aleutica Dall. Sitka.
1344 M. chalcedonica Cpr. (sub Montacuta). Mazatlan.
1345 M. clementina Cpr. (sub Lepton). Mazatlan.
1346 M. dinonæa Cpr. (sub Lepton). Mazatlan.
1347 M. elliptica Cpr. (sub Montacuta). Mazatlan.
1348 M. obtusa Cpr. (sub Montacuta). Mazatlan.
1349 M. pedroana Dall. San Pedro, Cal.
1350 M. Planata Dall. Alaska..
1351 M. sublævis Cpr. (sub Pythina). Mazatlan.
1352 M.? subquadrata Cpr. (sub Montacuta). Mazatlan.
1353 M. tumida Cpr. (sub Tellimya). Alaska to San Diego.
1354 Turtonia minuta Fabricius.
Bering Sea. Europe. New England.
1355 Turtonia occidentalis Dall.
Bering Strait, northward. Larger, stouter, and shorter than minuta.
1356 Cycladella papyracea Cpr. Mazatlan.

1357 Dall, William Healey:
Illustrations and descriptions of new, unfigured, or imperfectly known shells, chiefly American, in the U. S. national mu-

seum. U. S. nat mus pr 24:499-566, t 27-40.
Notes the following West American species, numbers 1358-1455.

1358 Punctum randolphii Dall.
Type locality:—Near Seattle, Wash. (P. B. Randolph).
Synonymy:—Pyramidula? randolphii Dall, Nautilus 8:130.
1359 Zonitoides (Pseudahyalina) pugetensis
Type locality:—Near Seattle, Wash. (P. B. Randolph).
1360 Ashmunella rhyssa
Type locality:—White Mountains, New Mexico (E. H. Ashmun).
1361 Ashmunella pseudodonta
Type locality:—White Oaks, New Mexico (E. H. Ashmun).
1362 Ashmunella ashmuni
Type locality:—Bland, New Mexiico (E. H. Ashmun).
1363 Holospira (Haplostemma) hamiltoni
Type locality:—Rio Grande mountains, Brewster Co., Texas (James M. Hamilton).
1364 Argonauta expansa
Gulf of California.
1365 Actæon (Microglyphis) breviculus
Type locality:—Off Santa Rosa Island, in 53 fms.
1366 Pleurotoma (Antiplanes) perversa Gabb.
Synonymy:—Drillia perversa Gabb.
Off San Pedro, Cal., and off Baja Cal., in 48 fms.
1367 Pleurotoma (Antiplanes) vinosa. Bering Sea.
1368 Pleurotoma (Antiplanes) piona. Bering sea.
1369 Pleurotoma (Antiplanes) thalæa
Type locality:—Off San Luis Obispo, Cal. North to Bering sea.
1370 Pleurotoma (Antiplanes) santarosana
Type locality:—Off Santa Rosa Island, Cal., in 53 fms.
1371 Pleurotoma circinata
Captains bay, Unalaska, in 60 fms. (Dall).
1372 Pleurotoma callicesta. Acapulco. 600 fms.
1373 Drillia empyrosia
Off San Pedro, Cal., in 20-50 fms. (Oldroyd).
1374 Cancellaria middendorffiana
North end of Nunivak Island, Bering Sea.

1375 Fusus roperi Dall.
"Shell small, rather short and wide, with a short, subacute spire and almost 6 whorls; color ferruginous brown, faintly spirally zoned and lighter on the siphonal fasiole, pillar and throat whitish, outer lip between the white of the throat and the margin showing narrow spiral brown lines on a yellowish ground, whorls with a tendency to a white, narrow peripheral line most evident on the summits of the ribs; whorls excavated behind, somewhat rounded before the periphery, the margin at the suture strongly appressed with the whorl in front of it somewhat constricted; suture distinct, hardly undulated, the spiral thread in front of it slightly minutely imbricated; axially directed sculpture of finely wrinkled silky incremental lines and (on the last whorl) 9 rounded ribs with rather wider interspaces, the ribs are obsolete near the suture, on the early whorls, and on the base; spiral sculpture of numerous flat strap-like threads with the interspaces much narrower and sharply reticulated by the incremental sculpture which rises in the interspaces nearly to the level of the tops of the threads; the nucleus (lost) is small, the first 2 or 3 whorls are more coarsely reticulate than the later ones; aperture elon-

gated and insensibly passing into a rather wide and short canal; siphonal fasciole rather marked, though the siphon is not recurved; pillar smooth, nearly straight with little callus; the body with no subsutural callus; the outer lip slightly flaring, hardly thickened; lon. of shell 26, of aperture 15.5, lat. 13 mm. San Pedro, Cal., in rather deep water, E. W. Roper; in whose honor the shell is named. This is a singular species, recalling Ocinebra or Muricidia by its surface sculpture and the constricted and appressed sutural region of the whorls. I have not been able to find any species with similar characters in the monographs or in the national collection. It is probable that it should be separated sectionally from the group typified by F. colus, and it cannot be associated with Sipho or Chrysodomus, so it may be regarded as typifying a new section, Roperia."—Dall, Nautilus, 12:4-5, May 1898.

1376 Buccinum angulosum Gray.
Synonymy:—Buccinum Stimpsoni Gould.
Shores of Polar Sea, near Bering Strait (Beechey).
1377 Buccinum plectrum Stimpson.
Bering Strait, in 25-30 fms. (Stimpson). Aleutian Islands.
1378 Buccinum castaneum
Shumagin Islands, Alaska, in 20 fms.
1379 Buccinum tenellum
Nunivak Island, Bering Sea.
1380 Buccinum picturatum. Aleutian Islands.
1381 Tritonofusus hallii
Synonymy:—Sipho Halli Dall.
Shumagin Islands, Alaska (W. G. Hall).
1382 Tritonofusus (Plicifusus) brunneus Dall.
Synonymy:—Chrysodomus brunneus Dall, Cal ac pr 7-6 (1877).
North end of Nunivak Island(Bering Sea, 10 fms., (Dall).
1383 Tritonofusus (Plicifusus) virens Dall.
Synonymy:—Chrysodomus virens Dall, Cal ac pr 7:6 (1877).
Kyska Harbor, Aleutian Islands, 10 fms. (Dall).
1384 Tritonofusus (Plicifusus) rectirostris Carpenter.
Synonymy:—Chrysodomus rectirostris Cpr.
Puget Sound, and around Vancouver Island in 68 fms.
1385 Tritonofusus (Plicifusus) spitzbergensis Reeve.
Synonymy:—Fusus spitzbergensis Reeve.—Neptunea (Sipho) terebralis Gould.—Sipho lividus Verrill.
Spitzbergen and the Arctic and Bering Seas.
1386 Tritonofusus (Plicifusus) roseus Dall.
Synonymy:—Chrysodomus roseus Dall, Cal ac pr 7:7 (1877).
Arctic ocean near Bering Strait (Capt. E. E. Smith).
Shell when fresh with a distinct rosy tint, fading to white, with a very thin pale olive periostracum. Apex not swollen nor planorboid; periostracum polished.
1387 Tritonofusus (Plicifusus) martensi Krause.
Synonymy:—Sipho martensi Krause.—Chrysodomus martensi.—Fusus conulus Aurivillius.
Point Barrow and south to St. Lawrence Island, Bering Sea, in 12-55 fms.

1388 Tritonofusus (Plicifusus) herendeeni Dall.
Bering Sea and the Aleutian Islands in 50-100 fms.
Shell with about 9 whorls, a slender spire, small but not planorboid nucleus, and pale olive periostracum. Pinkish white with a yellowish substratum and the periostracum dull and without

polish or villosity; lines of growth distinct, spiral sculpture of fine striæ with wider flattish interspaces, alternately coarser on the base; suture deep, the whorl below it often obscurely puckered near the suture; canal rather short, wide, and recurved. Alt. 70, diam. mm.

1389 Volutopsius trophonius Dall.
South of Pribilof Islands, Bering Sea, in 81 fms.

1890 Volutopsius kobelti Dall.
Pribiloff Islands, Bering Sea, and Nunivak Island.
Synonymy:—?Tritonium behringii Midd.—Neptunea behringii Kobelt.—Strombella beringi Dall.

1391 Volutopsius castaneus Mœrch.
Synonymy:—Neptunea castanea Moerch.—Neptunea badia Moerch.—Strombella castanea Dall.
Aleutian Islands and eastward to Kadiak, in shallow water.

1392 Volutopsius attenuatus Dall.
Synonymy:—Volutopsis attenuata Dall.—Strombella attenuata Dall.
Bering Sea and adjacent Arctic waters.

1393 Volutopsius regularis Dall.
Synonymy.—Volutopsis berengi var. regularis Dall.—Strombella regularis Dall.
Aleutian and Shumagin Islands, Alaska, rare.

1394 Beringius crebricostatus Dall.
Synonymy:—Chrysodomus crebricostatus Dall.
Unalaska, Aleutians, in 100 fms. (Dall).

1395 Beringius? kennicottii Dall.
Synonymy:—Buccinium kennicottii Dall.:—Chrysodomus kennicottii Dall.—Neptunea behringi Kobelt.
Kadiak Islands, Alaska.

1396 Liomesus Nux Dall.
Synonymy:—Buccinopsis nux Kobelt.
East shore of Nagai Island, Shumagins, and at Unalaska in 15 fathoms.

1397 Liomesus canaliculatus Dall.
Synonymy:—Buccinopsis canaliculata Dall.
North end of Nunivak Island, Bering Sea (Dall).

1398 Liomesus ooides Middendorf.
Tugar basin, Okhosk Sea (Midd.).—Bering Strait (Stimpson).
Synonymy:—Tritonium ooides Midd.—T. ovoides Midd.—Buccinium ovoides Kobelt.

1399 Astyris aurantiaca Dall, Am J Con 7:115 (1871), t 15 f 13.
Monterey, Cal., at low tide (Dall).
Color varies from orange yellow to brown or yellow with zigzag brown markings; generally subtranslucent.

1400 Murex (Pteropurpura) Carpenteri Dall.
Synonymy:—Pteronotus carpenteri Dall, Nautilus 12:148 (1899).
Farallones Islands, Cal., south to vicinity of San Diego, Cal., in 15-60 fms.
Shell of a somewhat livid pale brown, pinkish toward apex, white around aperture; surface smooth (except of the nuclean whorls and anterior faces of the varices).

1401 Murex (Pteropurpura) petri Dall, Nautilus 14:37 (1900).
San Pedro, Cal., in about 50 fms. (Oldroyd).
Yellowish-white, curved with finely imbricated spiral threads, of which about every fourth one is slightly larger; aperture white, varices distally curved.

1402 Boreotrophon tenuisculptus Cpr. 1866.

Synonymy:—Trophon subserratus Sby.

Aleutian Islands to Estero bay, near San Luis Obispo, Cal. Originally described from the Pleistocene of Santa Barbara, Cal.

1403 Boreotrophon scitulus Dall. 1891.

Dredged off Unalaska, in Bering Sea, in 225-309 fms. Probably extends to San Pedro channel, Cal.

1404 Boreoptrophon Kamchatkanus Dall.

Shell small, solid, yellowish white, with about 5 whorls; nucleus lost; subsequent whorls with (on the fifth 21) low, rude, rib-like varices, crossed by 4 or 5 obscure revolving cords, of which 2 are visible behind the sutures; in front of the suture is a sloping space somewhat constricted, at the shoulder is a cord, followed by others with wider interspaces and toward the canal more flexible; the incremental lines are also conspicuous; canal twisted, recurved, rather short and wide, aperture white, body and pillar callous, the latter twisted and obliquely truncate in front, forming a nearly pervious axis; lon. of shell 25; of aperture and canal 15; max. diam. 12 mm.

Type locality:—Southeast coast of Kamchatka, in 96 fms.

1405 Boreotrophon orpheus Gould.

Synonymy:—Fusus orpheus Gld. 1849.—Trophon fabricii Cpr. 1863 (non Beck, 1842).—Trophon stuarti of various authors, not Smith.

Vancouver Island to Cape Mendocino.

1406 Boreotrophon stuarti E. A. Smith. 1880.

Synonymy:—Trophon orpheus of various authors, not Gould.

Shumagin Islands, Alaska, to Santa Cruz, Cal., in 16-202 fms., living in shallower water at the north, and following the temperature into deeper water at the south.

Shell with 7-12 varices with the interspaces crossed by 4 or 5 rounded spiral cords, and reaches a length of 52 mm. The varices may be wide and thin with prominent spines at the shoulder, or low and hardly stronger than the spirals and spineless, a form which has a very different aspect from the type, the cancellation being very conspicuous.

1407 Boreotrophon (Stuarti var.?)**smithi** Dall.

This form is known to range from Fuca Strait to Santa Barbara, Cal., in 39-74 fms. It much resembles B. Stuarti in general, but differs by more slender whorls, with a more constricted suture, relatively wider varices, and the absence of any spiral sculpture. It has 6-8 varices, very thin, wide and sharp with high, strongly recurved spines at the shoulder. It reaches a length of 47 and a width of 23 mm. with 6 whorls exclusive of the nucleus. Canal strongly recurved and imbricating remnants of old canal ends are noticeable on the siphonal fasciole. Color whitish, with a pale brown or yellowish periostracum.

1408 Boreoptrophon peregrinus Dall.

Shell small, yellowish white, with 8 whorls; nucleus rounded, smooth, tilted, with 1½ whorls; subsequent whorls with 7 or 8 procumbent broad varices, strongly angulated at the shoulder, where the varices form compressed elevated spines; behind the angle the whorl is somewhat excavated; base of whorl constricted with a short recurved, imbricate canal; aperture squarish, white

within; surface with fine spiral striation; lon. of aperture and canal 12, of shell 23 mm.; max lat. 11 mm.

Type locality:—Off Catalina harbor, Santa Barbara Islands, Cal., in 16 fms., gravel (W. H. Dall, 1873).

1409 Boreotrophon multicostatus Esch.

Synonymy:—Fusus multicostatus Esch. 1829.—Trophon gunneri and Polyplex gracilis Cpr. 1863, not Loven, 1846, or Perry, 1811.

North end of Nunivak Island, Bering Sea, to Mendocino Co., Cal., in 2-5 fms. North coast of Japan, 3-45 fms., some Japanese specimens measuring 46 mm, long with 6 whorls and 9 varices.

1410 Boreotrophon beringi Dall.

North end of Nunivak Island, Bering Sea, to Cook's Inlet on the southeast, and northern Japan on the southwest, in 2-81 fms.

Shell greenish white, elegantly ovate-fusiform, with a rather elongated curved canal, aperture and canal longer than spire; whorls with base gradually attenuated, not constricted, about 6, with a distinct but not deep suture, and 9-12 sharp rounded varices, with no obvious angle at shoulder; surface with fine revolving striation, sometimes partly obsolete; aperture white; long. 40; max. lat. 17; long. of spire above aperture 16 mm. Operculum dark brown.

1411 Boreotrophon pacificus Dall.

This resembles B. beringi in miniature except that it has, with the same number of whorls, closer and more numerous varices, and the throat is sometimes pale brownish. Varices 15-20. Largest specimens 20-27 mm. long, average about 25 when mature.

Sea Horse Islands, Arctic Ocean, south to Sitka Harbor, in 5-60 fms.

1412 Boreotrophon disparillis Dall.

Grays Harbor, Wash., 52-77 fms.; south in deep water to San Pedro channel, Cal.

1413 Boreotrophon tripherus Dall.

Type locality:—Off Destruction Island, Wash., in 516 fms.

Also found off Tillamook bay, Oregon, in 786 fms.

1414 Boreotrophon alaskanus Dall.

Type locality:—Bering Sea north of Unalaska, in 225 fms.

1415 Boreotrophon mazatlanicus Dall.

Type locality:—Off Mazatlan, Sin., 995 fms.

1416 Boreotrophon panamensis Dall.

Type locality:—Gulf of Panama, in 1,270 fms.

1417 Boreotrophon avalonensis Dall.

Shell small, delicate, white, fusiform, with 1½ nuclear and 5 subsequent whorls; nucleus tilted, rounded, smooth; subsequent whorls finely spirally striated, with 8 or 9 sharp, appressed varices rising into radiant, narrow-grooved spines at shoulder; suture very distinct, aperture subovate, canal moderate, more or less recurved, pillar twisted, anteriorly attenuated; base hardly constricted; long. of shell 16.5, of aperture and canal 10; max. lat. 8 mm.

Type locality:—Off Avalon, in the Santa Barbara channel, Cal., in 80 fms. sand.

1418 B. (avalonensis variety?) **eucymatus** Dall.
Shell not spiny at shoulder, larger, with 15-18 varices, hardly raised and barely angular at shoulder; long. 27; max. lat. 9.5 mm.
Type locality:—Off San Diego, Cal., in 124 fms.

1419 Boreotrophon rotundatus Dall.
Shell small, with rather short spire and 5 or more fully rounded whorls; nucleus eroded; subsequent whorls with (on the last) about 14 keeled ribs, angular, but not spinose, at shoulder, passing over whorl to base; spiral striation obsolete or none; aperture subovate, yellowish within; canal moderate, recurved; lon. of shell 16; of aperture and canal 10; max. lat. 7 mm.
Type locality:—Southeast from Pribilof Islands, Bering Sea.

1420 Boreotrophon cepula Sby.
Bering Sea north of Nunimak Island; in the Pacific south, 41 85 fms. Japan, north coast, 48 fms.

1421 Variety **cymatus.** Pribilof Islands, 71 fms.

1422 Boreotrophon dalli Kobelt.
Cape Franklin, in the Arctic ocean, through Bering Sea into the Pacific.
Synonymy:—Fusus lamellosus Gray, 1839.—Trophon muriciformis Dall, 1877.—Trophon Dalli Kobelt, 1878.—Trophon gooderichi Sby.

1423 Variety **altus.** Spire exceptionally elevated.

1424 Trophon pinnatus Dall.
Dredged in Magdalena bay, and near Point Abreojos, Baja Cal., in 21-74 fms.

1425 Typhis Martyria Dall.
Type locality: off San Pedro, Martyr Island, Gulf of Cal., in 14 fms.

1426 Pedicularia Californica Newcomb, Cal ac pr 3:121 (1864).
This beautiful shell is white, clouded with deep rose, more or less modified in form by the surface to which it clings.
Farallones Islands to Monterey, Cal., attached to the stems of Gorgonians.

1427 Anaplocamus borealis Dall.
Pacific ocean, south of Unimak Island, Alaska, in 61 fms.
Shell bluish white with an olivaceous brown periostracum.

1428 Litorina aleutica Dall, Cal ac pr 4:271, t 1 f 3, 3a.
Aleutian Islands (Dall).
Shells mostly yellow brown, sometimes with lighter bands, throat dark, the broad pillar white, with a minute umbilical perforation.

1429 Litorina atkana Dall.
Shell large, solid, nearly smooth, whorls flattened next the suture, a few obsolete striations on base, outer lip thin, pillar broad and white. Alt. 20, lat. 17 mm. Commonly dark chestnut brown throughout, except on pillar.
Type locality:—Western Aleutians, from Atka Island westward.

1430 Amauropsis purpurea Dall.
St. Michael, Norton Sound, Alaska, and north to Point Barrow.
Shell purplish, with callosities of aperture white, and an adherent periostracum of olive, more or less streaked with brown, sometimes with black stains. Height near 50 mm.

1431 Amauropsis islandicus Gmel.
Alaska region and adjacent Polar Sea.
Shell invariably white, periostracum caducous, height 25 mm.

1432 Calliostoma turbinum Dall.
Off Point Conception, to San Diego, Cal., in 100-500 fms.
Shell small, turbinate, thin, nacre shining with a peculiarly coppery lustre, apex white, periphery painted with purple-brown flammules, and the spirals more or less articulated with the same color; pillar white.

1433 Calliostoma iridium Dall.
Off Panama, in 127 fms.

1434 Gibbula Canfieldi Dall.
Monterey and Santa Barbara, Cal. Occurs also in the Pleistocene. Shell pearly, with bronze-yellow pencilings obliquely to suture.

1435 Solariella carlotta Dall.
Queen Charlotte Islands, in 1,588 fms.

1436 Ganesa ? Panamensis Dall.
Type locality:—Gulf of Panama, in 1,020 fms.

1437 Margarites vorticiferus Dall, Cal ac pr 5:59, t 2, f 4a-b.
Southern portion of Bering Sea, Akutan Pass, westward to Atka Island, Aleutians.
Shell salmon pink varying in depth with the individual.

1438 Zeidora fiabellum Dall.
Synonymy:—Emarginula fiabellum Dall.
Type locality:—off Clarion Island, Baja Cal., in 460 fms., sand.
Shell subtranslucent white. Lon. 12.5, lat. 7.75, alt. 3.25 mm.

1439 Subemarginula yatesii
"Shell large, coarse, strong, whitish gray, or pale olive green on the fresher portions, especially a very narrow margin about the base; sculptured with strong, not dichotomous, radial ribs, of which about 20 are primary, between each 2 of which lie from 1 to 4 secondary riblets, most numerous at the sides of the shell: besides these there is a very strong anal fasciole, higher and stronger externally than any of the ribs, extending from the apex, and ending in front at a notch about 3.5 mm. deep and rounded above and behind; the radiating sculpture is sharply and irregularly imbricated by the rude and profuse incremental sculpture, which is too close and irregular to form reticulation; apex small, pointed, not much elevated, situated 3-fifths of the way from the front to the posterior margin; the fasciole descending from it swerves a little to the right of the median line of the shell; interior white, the extreme margin pale olive green but almost linear; anal furrow deep, extending nearly to the apex, where it is lost in a very pale olive deposit of shelly matter; margins crenulated by the sculpture; muscular impressions strong, the 2 recurved

scars unequal, the right one larger. Lon. of shell 51, lat. 36, alt. 13 mm. This shell was received from Dr. L. G. Yates, of Santa Barbara, who obtained it from a dealer at Monterey, Cala., who asserted it to have been obtained alive from the bay of Monterey. Two specimens were obtained, which the possessor would neither lend nor sell; but finally Dr. Yates succeeded in obtaining one of them, which he courteously forwarded to the National Museum for examination. It can only be compared with S. gigas von Martens, of Japan, in which the furrow is obsolete, and there are no secondary ribs, and the primary ribs are feeble, low, wide, and obsolete on the anterior part of the shell. If the locality is confirmed, the species is a notable addition to the Californian fauna."—Dall, Nautilus 14:125.

1440 Lepidopleurus mesogonus Dall.
Off Queen Charlotte Islands, B. C., in 1,588 fms.

1441 Lepidopleurus halistreptus Dall.
Type locality:—off Acapulco, Mexico.

1442 Lepidopleurus luridus Dall.
Type locality:—Panama bay.

1443 Lepidopleurus farallonis Dall.
Type locality:—off Farallones Islands, near San Francisco, Cal., in 391 fms.

Chiton small, thin, wide, with a low rounded back and yellowish-white color; girdle narrow, sparsely spiculose, with very short, fine, bristly spicules; jugum hardly defined, with no obvious mucro; lateral areas slightly elevated and feebly concentrically rugose; anterior valve simple; posterior conspicuously mucronate and, behind the mucro, concave; surface entirely covered with minute, low, close-set pustules, arranged quincuncially and to some extent concentrically from the mucronal points; pleural laminæ short, subtriangular; ctenidial line reaching the fifth valve. Lon. of animal about 10, lat. 5.5, alt. 2 mm.

1444 Ischnochiton Stearnsii Dall.
Chiton of moderate size, yellowish or buff color; girdle yellowish-white, covered with subcylindric, blunt, smooth, close-set, large spines, the ends of which have a pebbly appearance, mixed with a smaller proportion of small but rather similar spicules; ends of large spines, when worn flat, have a pavement-like aspect; back not keeled, but rather steeply rounded; gills ambient; intermediate valves with a dorsal angle of about 90 degrees, the lateral areas prominent, with about 5 radial riblets in each, divaricating to 7 or 10 at the girdle margin, and cut into beads by numerous fine concentric furrows; pleural areas and jugum hardly differentiated, sculptured with fine, slightly irregular, longitudinal wrinkles, finer mesially, crossed by inconspicuous, less elevated transverse lines; anterior valve with fine, beaded, divaricate radial riblets, the insertion plates and eaves very short, smooth, not spongy, with about 17 slits; the posterior valve with a small, low, subcentral mucro, from which 2 elevated lines extend to the margin, 1 on either side, forming 2 areas, and from which the wrinkled sculpture, less prominent on the anterior area, diverges; posterior slits about 15, lateral slits 2; sinus rather wide, entire; pleural laminæ rather wide and short. Lon. of animal about 25, lat. 15, alt. 6 mm.

Type locality:—off Farallones Islands, near San Francisco,

Cal., in 391 fms.

1445 Ischnochiton sarcosus Dall.

Chiton rather elongate, marbled with scarlet and white, paler mesially, rather low and not carinate; the girdle densely set with small, curved, smooth bristles of different sizes, dark red and white mixed; underside of girdle chocolate color, and interior of valves flesh pink; dorsal angle somewhat more than 110 degrees, the jugal region being rounded off; intermediate valves with prominent lateral areas hardly concentrically or radially sculptured, but finely punctate all over and more or less serrate near girdle on posterior margin; jugum not defined, central area of valves longitudinally sculptured with low inosculating wrinkles which sometimes form diamond-shaped interstitial excavations; whole sculpture has an obsolete appearance; anterior valve finely punctate, feebly concentrically sculptured; posterior valve the same, with a low subcentral mucro as in I. magdalenensis; anterior valve with about 8, posterior about 10 slits, intermediate valves with 2 slits; sinus wide, entire; pleural laminæ wide, short; lon. in the dry state 36, lat. 15, alt. 5 mm.

Type locality:—off San Martin Island, Baja Cal., in 30 fms. (Fred Baker).

Portugese Band, near San Pedro, Cal. (T. S. Oldroyd).

1446 Leda hamata Cpr.

Near Catalina Island, Cal., in about 50 fms.

Shell small, compressed, of a dark chestnut brown.

1447 Pecten Randolphi Dall, Nautilus 11:86.

Occurs in deep water from Bering Sea to West Mexico, in from 225-1005 fms.

Shell subtranslucent white, glossy, extremely thin.

1448 Pecten Davidsoni Dall, Nautilus 11:86.

Bering Sea and the Aleutian Islands and eastward to Kadiak Island, Alaska, in 280-351 fms.

Shell waxen white, having the aspect of a Propeamusium externally, but really belonging in the section Pseudamusium.

Named in honor of Prof. George Davidson, the distinguished geographer and astronomer.

1449 Crenella megas Dall.

Type locality:—Panama bay, 33 fms.

1450 Limopsis Panamensis Dall.

Type locality:—Panama bay, in 1020 fms.

1451 Venus Kennicottii Dall.

Synonymy:—Mercenaria Kennicottii Dall.

Neeah bay, Wash. (Swan); Little river, Mendocino co., Cal. (Harford).

Shell of a yellowish white with some ferruginous stains externally.

1452 Panopea globosa Dall.

Type locality:—head of the Gulf of Cal. (Edward Palmer).

Shell of a yellowish white, shorter, thinner, and more globose than P. generosa and probably distinct. It reaches 160 mm. in extreme length.

1453 Panomya ampla Dall.

Synonymy:—Panopæa norvegica Midd. (part).

Recent in the Gulf of Alaska and Okhotsk Sea in shallow water, and in the Pleistocene of the same region.

Shell chalky white with a black dehiscent tarry periostracum, which is rarely preserved even in the living animal, which tne valves only partially cover.

1454 Cetoconcha scapha Dall.

Type locality:—off Cocos Island, in 100 fms.

1455 Terebratalia Hemphilli Dall.

Pliocene of Santa Barbara, Cal. (J. Howard Wilson).

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1456 Dall, William Healey:

Descriptions of new species of mollusks from the Pacific coast of the United States, with notes on other mollusks from the same region. U S Nat Mus pr 34:245-257.

Mentions numbers 1457-1477 inclusive.

1457 Clystaxis? polystrigma Dall.

Shell small, white, barrel-shaped, with the posterior part of the outer lip extending slightly beyond apex of shell; form much as in Haminea solitaria Say; apex sunken, imperforate, spire concealed; outer lip partly membranous and contracting in drying, shell normally covered with a thin periostracum, which in drying splits and contracts; sculpture of close, numerous, spiral rows of emphatic punctations, covering shell; aperture ample; outer lip thin and submembranous, its posterior extremity rounded over evenly to suture, anterior part not expanded; pillar lip thin, arcuate, margin reflected, forming a gutter just outside the margin; body with little callus, only one whorl visible. Length of young shell, 2.8, maximum diam. 2.2 mm.; adult 3 times as long, soft parts do not envelop the shell.

Type locality:—off entrance to San Diego harbor, Cal., in 50 fms. (F. W. Kelsey).

1458 Turris (Antiplanes) diaulax Dall.

Shell small, acute, conic, brownish, with about 9 whorls; suture distinct, not appressed; surface smooth, except for incremental lines and 2 impressed shallow spiral channels near periphery of whorls; surface just behind each channel is slightly raised, forming a flattish band about as wide and high as the channel is wide and deep; on the base and canal there are also some faint spiral threads; sides of spire flattish, the periphery nearest the succeeding suture, which is laid on the anterior edge of the anterior channel, thus giving the whorls a sort of overhang in appearance; aperture short and rather narrow; outer lip sharp, simple, produced; anal sulcus narrow and rather deep, situated just behind posterior channel; body without callus; canal short, wide, recurved; pillar lip arcuate, smooth. Height of shell 19, of last whorl 10, of aperture 6.5, max. diam. 6.5 mm.

Type locality:—off Coronado Islands, Baja Cal., in 34 fms., sand.

1459 Turris (Surcula) ophioderma Dall.

Based on Drillia inermis Hinds; Pleurotoma inermis Hinds, 1844, (non Partsch 1843).

1460 Turris (Surcula) rhines Dall.

Synonymy:—Pleurotoma cancellata Cpr. 1863.—Drillia cancellata Cpr.

1461 Turris (Surcula) halcyonis Dall.

Shell small, slender, very acute, of a livid purple covered with an olivaceous periostracum, with about 11 whorls; nucleus more or less eroded, but apparently smooth, acute, and including about 2½ whorls; subsequent whorls rather flat, compressed and appressed at and in front of suture, with a rounded base and inconspicuous anal fasciole; sculpture chiefly of flattish spiral threads, one at suture, 3 smaller ones in front of it, followed by a flat broader one representing the fasciole, then (on the last whorl 8) more prominent threads, undulate or segmented by incremental lines and with wider interspaces (sometimes containing an intercalary smaller thread) to base, followed by 6 or 7 unsegmented threads to the siphonal fasciole, which bears 6 or 7 smaller threads; the succession of undulations or slightly swollen segments gives a slightly cancellate effect to the part of whorl which bears them, but there are no axial ribs, the effect of being produced rather by depressions between the rather coarse incremental lines; aperture narrow, acute behind, the anal sulcus narrow and distinct but not very deep, the outer lip in front of it arcuately produced, the canal contracted, short, and recurved; inner lip polished and superficially erased; pillar twisted, with a thin layer of callus; operculum present as in T. ophioderma. Height of shell 23, of last whorl 12.5, of aperture and canal 8, max. diam. 7 mm.

Type locality:—off Coronado Beach, San Diego, Cal., in 10 fms. (F. W. Kelsey).

Also found at San Pedro by various collectors.

1462 Acanthina lapilloides aurantia Dall.

Type locality:—on rocks at San Pedro, Cal. (Dr. R. H. Tremfer).

An orange-yellow color variety, slightly smaller than the typical form, with the interspaces of the spiral threads prettily lamellose axially and more or less articulated with blackish brown small spots.

1463 Tritonofusus (Plicifusus) Kelseyi Dall.

Shell elongate, slender, acute, the spire much larger than the aperture; white, covered by an olivaceous periostracum; having 10 whorls exclusive of the (eroded) nucleus of about 2 whorls; suture appressed and the whorls slightly constricted in front of it; axial sculpture of (on 7th whorl about 12) concavely arcuate, slightly protractive, low narrow ribs, crossing the whorls, on the later whorls becoming obsolete and finally absent from the last whorl altogether; interspaces wider than ribs; these are crossed by fine sharp spiral striæ, somewhat irregularly spaced, of which there are about 12 on the 7th whorl, a narrow space before the suture being less sharply or not at all striate; aperture narrow, outer lip arcuate, somewhat excavated near suture and produced anteriorly. slightly thickened, simple, and internally smooth; inner lip smooth, with sculpture erased, passing gradually into the long straight pillar, which is attenuated in front; canal long, narrow, straight; length of shell 34, of last whorl 18.5, of aperture 14.5, max. diam. 8 mm.

Type locality:—off San Diego, Cal., in 124-359 fms.

Named in honor of F. W. Kelsey, who dredged it off San Diego in 50 fms. Found in the Pleistocene at San Pedro, Cal. (Eshnaur).

1464 Boreotrophon Bentleyi Dall.

Shell small, slender, acute, ashy white, with about 7 whorls;

nucleus with the surface eroded; suture distinct, the whorl in front of it somewhat tabulated by an obscure angle from which the spires arise; axial sculpture, besides incremental lines, only of about (on the last whorl) 10 sharp depressed lamellar varices, prominent only behind the periphery and feeble on base; at the shoulder these are produced into high, usually recurved, guttered spines, which in some cases are nearly straight, in others curved toward the preceding whorl until they may even touch it; aperture ovate, canal long, slender, slightly recurved. Height 19.5, of last whorl (without the spines) 14.5, of aperture and canal 11.5, max. diam. 6.5 mm.

Type locality:—off San Diego harbor, Cal., in 20 fms. (F. W. Kelsey).

Named in honor of Dr. Charles S. Bentley.

1465 Columbella (Anarchis) petravis Dall.

Shell minute, blunt, solid, varicolored, chiefly purplish or flesh color, but distributed much like the colors of Amphissa versicolor, either solid or in pattern; whorls about 6, the nucleus including 2 of these which are smooth, polished, swollen, and apically blunt; suture distinct, appressed, the whorl in front of it (last whorl) slightly constricted; sculpture of (on the last whorl about 16) small, subequal, rounded, slightly flexuous ribs, distally protractive, and with narrower, microscopically faintly spirally striated interspaces; the last whorl terminates in a pale-colored thickening, or indistinct varix; aperture and canal very short and wide; outer lip internally with a few indistinct liræ; pillar smooth, obliquely attenuated in front. Height 4.5, last whorl 2, aperture 1.4, max. diam. 1.7 mm.

Type locality:—Bird Rock Beach, San Diego, Cal., under stones (F. W. Kelsey).

1466 Columbella (Anachis) Arnoldi Dall.

Synonymy:—Columbella minima Arnold (name preoccupied).

From the Pleistocene of San Pedro, Cal.

1467 Opalia (Dentiscala) Mazatlanica Dall.

Type locality:—Mazatlan, Sin., Mexico.

1468 Opalia (Dentiscala) Mexicana Dall.

Type locality:—Acapulco, Mexico (W. H. Dall).

1469 Epitonium (Crisposcala) acrostephanus Dall.

Shell slender, acute, turreted, with 2 nuclear and 9 or more subsequent whorls which are in contact, tho separated by a deep suture across which the varices are continuous; axial sculpture of (on last whorl 14) nearly vertical, thin, sharp, slightly reflected varices, which are expanded near the suture into a small lamella of which the posterior corner, when intact, bears a small, sharp spine, behind which the varix is much attenuated and turns into the suture, which it crosses and becomes connected with one of the varices of the preceding whorl; the anterior face of the varices is concentrically sharply striate, and the portion which approaches the center of the base is slightly flattened, although there is no basal disk or perforation; the space between the varices is smooth and polished, but under a lens shows traces of faint spiral striation, more or less irregular; the aperture is rounded-ovate, the peritreme thin and like the preceding varices; the operculum is thin, of about 3 whorls, concave and centrifugally striated, of a pale horn color. Height of shell 20, of last whorl

8.5, of peritreme 4.5, max. diam. 6.5 mm.
Type locality:—Newport, Cal. (H. N. Lowe).
Monterey, Cal., to Coronado Islands, Baja Cal., in 16-34 fms.

1470 Epitonium (Crisposcala) Catalinæ Dall.

Shell slender, white, turrited, imperforate, with more than 7 adherent whorls; nucleus (lost); suture distinct, closed; varices (on the last whorl 14) continuous, making nearly one revolution around the axis in ascending the spire; they are flatly reflected, axially striate, subspinose at the shoulder, giving a tabulate aspect to the rounded whorls. There is no basal disk on the whorl but on the basal part of each reflection of the varices there is a smooth area over which the suture travels, and which, taken collectively, gives the effect of segments of a disk imposed on the varices but not on the whorl; below the shoulder the varices are widely reflected, extending for a space to the angle of reflection of the preceding varix, where it would seem these extensions are normally attached, covering a hollow space between them and the whorl, but in the type-specimen most of these extensions are broken away; aperture subcircular. Height of (decollate) 6 whorls 12, of last whorl 6, of aperture 2.7, max. diam 4.5 mm.

Type locality:—off the south side of Catalina Island, Cal., in 16 fms. (W. H. Dall).

1471 ?Eulima Lomana Dall.

Shell slender, acute, flat-sided or nearly so, chalky white, with an extremely thin yellowish external coating; nucleus eroded; subsequent whorls very slightly convex, with an obscure peripheral angle on last whorl, upon which the suture of the advancing whorl is closely appressed; surface smooth and polished except for very obscure and minute spiral lines only visible in good light with a lens; base convexly rounded, imperforate; aperture ovate-quadrate, outer lip simple, thin, gently arcuate; body bare, pillar almost straight, twisted and with a very obscure prominence like an obsolete plait; an examination of the interior of the upper whorls, however, show no plication; anterior of aperture gently rounded; there are no indications of varices or resting stages on spire. Height of shell 20, of last whorl 10, of aperture 6.5, max. diam. 7 mm.

Type locality:—16 miles off Point Loma, San Diego, Cal., in about 650 fms.

1472 Odostomia (Evalea) atossa Dall.

Shell small, bulimiform, bluish white, polished, with 4 gently convex whorls beside a very minute (and somewhat eroded) nucleus of about one whorl; suture distinct, not appressed; surface with 2 or 3 faint spiral threads on the second, 4 or more on the 3d, becoming obsolete on the last whorl, subequally distributed between the sutures; besides these there are numerous extremely fine spiral striæ only visible under a lens, and which also become obsolete toward the aperture; aperture subovate, acute behind; outer lips simple, sharp;anterior margin gently rounding into the arcuate pillar lip, which has a single strong plait close to the body; a thin wash of transparent enamel on the body; axis imperforate; operculum thin, paucispiral, pale yellowish. Height of shell 6.25, of last whorl 5, of aperture 3.25, max. diam. 3.7 mm.

1473 Trichotropis? Kelseyi Dall.

Shell small, whitish, with a velvety pale olive periostracum and 3½ whorls; spire very short; suture very deep, not chan-

nelled, but with the whorl in front of it elevated so as to make a shallow V-shaped trough; nucleus large for the size of the shell, turgid, not distinctly marked off from the rest of the shell; sculpture of fine, even, rounded, closely adjacent, spiral threads, a little more distant on the base, absent from the trough of the suture, with about 22 between the suture and the rim of the umbilical funnel; axial sculpture only of incremental lines; last whorl much the largest, rounded, produced basally, with a deep narrow funicular umbilicus, bounded by a rounded ridge corresponding to a siphonal fasciole; aperture semilunate, rather narrow, produced and almost channeled in front; outer lip thin, arcuate, simple, sharp, not reflected; pillar lip thin, straight, sharp, elevated, connected across the body by a thin layer of callus with the outer lip; pillar absolutely smooth and simple, without any trace of plaits; operculum 0? Height of shell 6.2, of last whorl 5.5, of aperture 3.5, max. diam. 4 mm.

Type locality:—off San Diego, Cal., in 359 fms.

1474 Phasianella (Tricolia) compta producta Dall.

Distinctly more elevated and slender than type; color pattern similar, but color decidedly darker and more olivaceous.

1475 Teinostoma politum Adams.

Costa Rica, in 8 fms. (Cuming).—La Paz, Baja Cal. (L. Belding).

1476 Fissurella volcano crucifera Dall.

Type locality:—San Pedro, Cal. Also occurs at San Diego, south.

Ground color brownish-gray, with darker maculæ, while from the apex start 4 broad white rays at right angles to each other, the posterior ray becoming V-shaped, the others remaining entire, each ray reaching 4-5 mm. in length, and the anterior and posterior rays being in the longer axis of the shell.

1477 Yoldia (Scissula) ensifera plena Dall.

The peculiar grooving of the valves extended to within 6 mm. of the posterior extremity and over the whole anterior end in specimen 28 mm. long, all the specimens showing similar extension of the sculpture.

Type locality:—off San Diego harbor, Cal., in 8 fms. (F. W. Kelsey).

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1478 Hemphill, Henry:

New varieties of Patula strigosa. Nautilus 4:15.

Names the following varieties, with full descriptions:

1479 Variety **carnea.** Near Salt Lake, Utah.
1480 Variety **picta.** Rathdrum, Idaho.
1481 Variety **rugosa.** New Brigham City, Utah.
1482 Variety **parma.** Near Spokane Falls, Wash.
1483 Variety **hybrida.** Near Logan, Utah.
1484 Variety **albida.** Near Logan, Utah.
1485 Variety **fragilis.** Near Franklin, Idaho.

—o—

1486 Sterki, V.

Notes on some North American Pupidæ with descriptions of new species. Nautilus 4:7-9, 18-18, 27-28.

Mentions the following species and varieties.

1487 Pupa californica Rowell.

"From San Francisco. Several hundred examples of the well known form everywhere in collections. It may be regarded as typical, yet is somewhat variable in itself, as to shape of the shell and number and size of the lamellæ; many specimens are more or less oblong or obovate, while the majority are rather cylindrical; in some, the superior palatal lamella is very small and in a few even entirely wanting, while the apertural, columellar and inferior palatal seem to be constant, the first and last of them generally well formed, while the columellar may be small. In one specimen I saw a tiny but distinct supra-apertural, and in very many there is a small-nodule-like supra-apertural, close to the middle of the (outer side of the) apertural. So far I had thought this latter to be a special, distinguishing character of P. Rowelli Newc."—Sterki.

1488 Variety elongata. San Clemente Island.

"A little smaller and generally more cylindrical than the type; a part are even long cylindrical, having the appearance of an Isthmia. The coloration is somewhat paler, and the lamellæ are well-formed—elongata. Among the more than 100 specimens there were 5 different from the balance, and ranging with the following form."—Sterki.

1489 Variety catalinaria. Santa Catalina Island.

"All the examples (about 200) are of quite a peculiar form: small, rather short, pale horn colored; shell thin, delicate; rib-like striæ less numerous and relatively larger; the whorls are less high, which gives the shell a different appearance. All lamellæ are present and well-formed, specially the apertural. The shell is nearly exactly of the size and shape of Vertigo bollesiana Morse, from New York or Ohio, and also the lamellæ are much alike. One peculiarity is that in about one-third of the examples a part of the shell is wanting, always on the side of the aperture, so that 3 or even 4 whorls are opened. This can hardly be accidental, and probably that part of the thin shell is worn off by friction in moving."—Sterki.

1490 Variety trinotata. Monterey, Cal.

"In size not much different from the type, yet a little smaller, and more generally obovate; the striæ are less coarse; the peristome is slightly but distinctly expanded. There is no superior palatial lamella, and the 3 present ones are small, the columellar even a trace or wanting entirely."—Sterki.

1491 Variety Diegœnsis. San Diego, Cal.

"The diminution of the lamellæ is going on; none but the apertural is left in this variety—diegœsis—and that even is quite small or a mere trace. In size and shape, the examples are not much different from the Monterey form, which is an intermediate one."—Sterki.

This form I first found growing on Roccella tinctoria, near San Quintin bay, Baja California, and distinguished as Pupa orcutti (Pilsbry, ined.). Later, I found it near Ensenada, on Todos Santos bay, Baja Cal., and near San Diego, Cal.—in both places on plants of Mesembrianthemum æquilaterale.—Orcutt.

1492 Variety cyclops. Rocklin, Placer, Co., Cal.

"Large, conic or ovate conic, or turriculate, umbilicated, rib-like striæ rather strong; whorls 5, well rounded, with deep suture, the

last occupying more than ½ altit.; aperture subovate or nearly circular, margins much approximate and the ends protracted, peristome shortly but decidedly expanded; lamellar one, apertural, small. Alt. 2,5; diam. 1,5 mill."—Sterki.

The above descriptions are based on material furnished by Henry Hemphill.

1493 Pupa Dalliana Sterki.

"Shell conic or ovate-conic, of greenish-horn color, transparent, finely irregularly striate in the lines of growth, polished; whorls 4½, well rounded, with deep suture, rather rapidly increasing, the last occupying about 2-3 of altit., towards the aperture somewhat ascending on one penultimate. Aperture lateral, somewhat oblique, subovate with just perceptibly flattened palatal margin; margin approximate, the ends protracted; peristome shortly but decidedly expanded, with a very fine callus on the apertural wall inside of the line connecting the ends of the margins; palatal wall quite simple; no lamellæ. Alt. 1.2; diam. 1.3 mill."—Sterki.

Type locality:—near Clear Lake, Lake Co., Cal. (Henry Hemphill).

Named in honor of William Healey Dall.

1494 Pupa Hemphilli Sterki.

Sterki compares this with P. calamitosa Pilsbry, describing this as averaging a trifle larger, but says either is somewhat variable in size. While calamitosa has a minute perforation, hemphilli is umbilicated in quite a peculiar way: there is a nodule-like projection on the umbilical part of the last whorl producing a rima beside the umbilicus; in calamitosa there is nothing of this formation. On the other hand, the latter has a small but distinct groove-like impression just at the base, near the aperture appearing as a slight projection inside; this feature is wanting in hemphilli.—Lamellæ: in the latter species, when looking from front only one is generally seen in the palatal wall, corresponding to the superior one in calamitosa, but longer, i. e., beginning deeper in the throat, and fairly seen on the outside, also marked there by a corresponding impression, ascending in a curve from near the base; a little distant from its inner end, just above the projection mentioned, there is another lamella beginning, directed toward the base and ending there, also seen on the outside. Quite generally there is a very small, thin, but well-formed lamella in the palatal wall near the projecting auricle. The columellar fold is quite short and small in hemphilli yet consisting of a vertical and a horizontal part; the (main) apertural lamella is decidedly longer in hemphilli, and the supra-apertural higher and entire, while in calamitosa it is evidently composed of two parts marked by an indentation in the middle, or even entirely separated, in quite mature specimens.

Type locality:—banks of Santo Tomas river, Lower Cal. (Hemphill). Also collected at San Diego, Cal., by Hemphill, Orcutt and others.

1495 Pupa clementina Sterki.

"Shell very minute, narrowly perforate, cylindrical, pale horn colored, transparent, with rather obtuse apex; whorls 5½, regularly increasing, moderately rounded, with rather deep suture, smooth, with few microscopic striæ, somewhat shining; last whorl occupying rather more than 2-5ths of altit., somewhat ascending to the aperture, with a light, revolving impression on the middle

of its last third, ending at the auricle; a very slight, flat, crest-elevation near the margin, only in the lower part; aperture lateral, scarcely oblique, subovate with the palatal margin slightly flattened, upper part of same somewhat sinuous, peristome a little expanded, with a slightly thickened lip just at the margin; lamellæ 6, white; 2 on the apertural wall, the apertural, typical, and a rather long supra-apertural, ending in a callus at the upper termination of the palatal margin; columellar one typical, horizontal; basal very small, nodule-like, deep seated; palatals 2, typical, the inferior a little longer. Alt. 1.9, diam. 0.8 mill.; apert.: alt. 6, diam. 0.5."—Sterki, Nautilus 4:44, t 1, f 4.

Type locality:—San Clemente Island, Cal. (Hemphill).

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1496 Hemphill, Henry:

New varieties of western land shells. Nautilus 4:41-43.

Describes the following forms, numbers 1497-1500.

1497 Helix ptychophorus castaneus

"Shell umbilicated, globosely depressed, of a dark chestnut color; surface covered with coarse, irregular, widely separated lines of growth, and crowded, microscopical revolving lines; whorls 5½, convex, the last slightly descending in front, spire elevated; suture well impressed, aperture subcircular; lip white, reflected and partially covering the umbilicus, its terminations approaching; umbilicus small and deep. Height 5-eighths inch, diameter 1 inch."—Hemphill.

Type locality:—Old Mission and Rathdrum, Idaho.

1498 Helix tudiculata subdolus

"Shell narrowly umbilicated; globosely depressed, of a dark yellowish color, surface somewhat shining, covered with oblique striæ, interrupted by numerous wavy lines and oblong blister-like wrinkles, hardly perceptible to the naked eye; whorls 5½, convex, striped by a single chestnut band, double margined by higher ones; spire very little elevated, suture well impressed; lip simple reflected, and nearly covering the umbilicus, its terminations approaching and joined by a thin callus; umbilicus narrow and small. Height 5-eighths inch, greatest diam. 1 inch, lesser ⅞ inch. A very depressed form, quite variable in size, some of the specimens not being more than half the size of the measurements given."—Hemphill.

Type locality:—San Jacinto valley (now Riverside Co.), Cal.

1499 Selenites Vancouverensis Keepi

"Shell umbilicated, greatly depressed, thin, smooth, shining transparent, scarcely marked by the delicate wrinkles; very light horn color; whorls over 4, somewhat flattened above and beneath, and scarcely descending at the aperture; spire flat, not rising above the body whorl; suture well impressed; umbilicus moderately large, exhibiting most of the volutions; aperture transversely subcircular, wider than high; lip simple, thickened, sinuous above, very slightly reflected at the base, ends scarcely approached. Width 5-16ths inch, height 2-16ths inch."—Hemphill.

Type locality:—hills near Oakland, Cal. (Hemphill).

Named in honor of Josiah Keep.

1500 Selenites Vancouverensis hybrida

"Shell broadly umbilicated, depressed, slightly convex above, surface shining, polished, of a dark yellowish-green color, lines of growth coarse, rib-like and regular on the spire, finer and more

irregular on the body-whorl, crossed by five revolving lines that become fainter on the last whorl, suture well impressed; aperture rounded, broader than high, greatly indented above; lip simple, very little reflected below at its junction with the columella, very sinuous above, its terminations joined by a very thin callus. Height 3-8ths inch, breadth 1 inch."—Hemphill.

Type locality:—Astoria, Oregon.

1501 Hemphill Henry:

New forms of western Limniades. Nautilus 4:25-27.

Describes numbers 1502-1504.

1502 Limnæa (Leptolimnea) Pilsbryi Hemphill.

"Shell elongated, narrow, somewhat solid, smooth, of a light horn-color; consisting of about 6 roundly-shouldered whorls, the last flattened on its sides and occupying a little more than half the length of the shell; lines of growth very delicate, suture deep; aperture oval, longer than wide, outer lip acute; inner lip subreflexed. Length 3-8ths, breadth 1-8th of an inch."—Hemphill.

Type locality:—Fish Spring, Nevada.

1503 Limnæa stagnalis occidentalis

"Shell large, globose, very thin and fragile; of a light horn-color; whorls 5, the last rapidly increasing in size and constituting about ¾ the entire length of the shell and generally covered with revolving malleations separated by obtuse, irregular lines more or less conspicuous; lines of growth somewhat irregular and conspicuous; spire short, sharp and acute, consisting of 3 obliquely twisted whorls and the nucleus; suture well impressed; aperture globosely oval, longer than wide; outer lip thin, sharp, acute, subreflexed near its junction with the columella; inner lip sinuous and well defined, columellar strongly twisted. Length of the largest specimen 1⅝ths inch, breadth 1 inch."—Hemphill.

Type locality:—Lake Whatcom, Whatcom Co., Wash.

1504 Physa ampullacea columbiana

"Shell globose or moderately elongated, shining, solid; of a dark horn, or chestnut color; whorls 4, the last occupying about ¾ entire length of the shell; suture well defined and generally marked by a fine yellowish line; spire short, obtuse; aperture long and moderately wide; outer lip simple, thickened internally with a dark chestnut deposit that shows on the outside as a yellowish band; columella lip somewhat sinuous, and well folded on the body whorl. Length of an elongated specimen 5-8ths, breadth 5-16ths of an inch. Length of a globose specimen ½, breadth 5-16ths of an inch."—Hemphill.

Type locality—Columbia river, Astoria, Oregon.

Tryon considered this a variety of Physella globosa Hald. according to Hemphill, who considers it instead as a miniature form of P. ampullacea, which he collected in the Owens river valley and on the upper Colombia.

1505 Helix (Arionta) carpenterii Newcomb

Roundly conical; apex obtuse; whorls 5½, convex, strongly striated, with numerous fine spiral lines; suture well impressed; aperture circular, margins approaching; lip a little expanded; umbilicus open. Brownish, with an obscure dark band. Diam. 23, height 16.5 mm.

Tulare Valley, Cal. (type locality?).

1506 Yates, Lorenzo Gordin:
A new variety of Helix carpenteri from southern California. Nautilus 4:51. Notes a shell found near Indio, (now) Riverside Co., Cal., collected by Dr. Stephen Bowers, more fully described and named on page 63, as below:

1507 Variety Indioensis
"Shell umbilicated, rounded conical, apex obtuse, obscurely marked with one brown band, lines of growth well defined; whorls 5, rounded; suture well marked; aperture circular, entire; peristome slightly expanded, except at the columella, where it is broadly expanded in a line nearly parallel with the vertical axis. Greater diameter 18 mm., height 12 mm."—Yates.
Orcutt, Nautilus 4:67, refers to this and the typical carpenteri as forms of Helix Traskii.

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1508 Pilsbry, H. A.:
Notices of new Amnicolidæ. Nautilus 4:63.
Describes

1509 Bythinella Hemphilli
"Shell minute, very slender, about the shape of Carychium exiguum Say. Apex obtuse, whorls 5, convex, the last imperforate. Aperture ovate, about 1-3d the length of the entire shell; peristome continuous, its plane oblique to the axis of the shell, the base of the lip being advanced. Color, corneous, often encrusted with a black ferrugineous deposit. Alt. 2.4, diam. 1 mm."—Pilsbry.
Type locality:—near Kentucky Ferry, Snake river, Wash. (Hemphill).

1510 Pisidium Idahoense Roper.
"Shell large, sub-ovate, full, oblique, inequilateral, anterior end a little longer, margin well rounded; beaks scarcely raised, not prominent; approximate at apex; lines of growth delicate; epidermis glossy, light yellow, some specimens with brownish zones in center of valves, not extending to the edges, leaving a broad, marginal border; interior bluish white; hinge margin curved, narrow; cardinal teeth very small, lateral teeth long and slender. Length 0.35; height 0.31; breadth 0.21 inches."—Roper, Nautilus 4:85.
Type locality:—muddy slough near Old Mission, Idaho (H. Hemphill).

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1511 Keep, Josiah:
Mollusks of the San Francisco markets. Nautilus 4:97.
Mentions Ostrea virginica, O: lurida, Mya arenaria, Tapes staminea, Mytilus edulis, M: californianus, Cardium corbis, etc.

1512 Haliotis fulgens Philippi.
Synonymy:—H: splendens Reeve.—H: planilirata Reeve.

1513—Haliotis planilirata Reeve.
Synonym of H: fulgens Phil.

1514 Haliotis nodosa Philippi.
Synonym of H: corrugata Gray.

1515 Haliotis glabra Deshayes.
1516 Haliotis interrupta Valenciennes.

1517 Haliotis californiensis Swainson.
Nos. 1515-1517 are generally treated as synonyms of Cracherodii.

1518 Haliotis Californiana Valenciennes.
Synonym of H: rufescens.

1519 Haliotis ponderosa C. B. Adams.
Supposed to be rufescens.

1520 Ariolimax columbianus straminea
"Animal when extended about 6 inches long, with the markings of A: columbianus, of a uniform light straw color, a shade lighter beneath the foot. Santa Cruz Island, Cal."—H. Hemphill, Nautilus 4:120.

1521 Carychium exiguum occidentalis
"Somewhat larger than typical exiguum, distinctly conical, not at all cylindrical, acute; outer lip expanded, thin, not at all toothed. Portland, Oregon."—Pilsbry, Nautilus 4:109.

1521 Pupa hordeacea Gabb.

1522 Pupa hordeacella Pilsbry.
Sterki, Nautilus 4:141, discusses these two species, occurring in Arizona, New Mexico and Texas.

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1523 Cockerell, Theodore D. A.:
The slugs of British Columbia, Nautilus 5:30.
Notes given on numbers 1524-1529.

1524 Agriolimax campestris hyperboreus
Comor, 140 miles north of Victoria (Taylor).

1524a Agriolimax Berendti Strebel.
Cockerell considers Limax Hemphilli as a variety.

1525 Prophysaon Andersoni Hemphilli
British Columbia (Rev. J. H. Keen).

1526 Variety **pallidum** Cockerell.
"Paler, ochreous, the bands on mantle evanescent, reticulation on body not dark, back not darker than sides, neck pale."—Cockerell.
British Columbia (Rev. J. H. Keen). The largest 46 mm. long (in alcohol).

1527 Ariolimax Columbianus Gould.
Cockerell describes forma typicus as without black spots.

1528 Forma maculatus Cockerell.
Cockerell cites a specimen in alcohol 63 mm. long, tail well keeled for 18 mm.; a large spot on mantle; sole with median area smooth though wrinkled, lateral area rough; jaw dark, with 15 ribs.

1529 Forma niger Cockerell.
Entirely black, except the sole, which is rather olivaceous.

One specimen, 57 mm. long (in alcohol), from British Columbia.

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1530 Pilsbry, Henry A.:
On Helix Hardfordiana Cooper and other shells. Nautilus 5: 39 t 2.

1531 Helix (Polygyrella) Harfordiana
Type locality:—Big Tree district, Fresno Co., Cal. 6500 ft. elevation (W. C. W. Harford, 1869).

1532 Polygyra (Triodopsis) Mullani Olneyæ
"Shell very much depressed, the spire nearly flat; aperture transversely oval, the upper and basal lips parallel; peristome completely revolute, more curled over than in any other form I have seen; basal lip with a white callus but no tooth; no trace of a tooth on the outer or upper lip; parietal wall having a small tooth. Alt. 6, diam. 13 mill.; oblique alt. of aperture 6½, width 8½ mill., measured outside of peristome."—H. A. Pilsbry, Nautilus 5:47.
Type locality:—Spokane, Wash. (Mrs. Mary P. Olney).

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1533 Wood, Williard M.:
and William T. Raymond:—Mollusks of San Francisco County. Nautilus 5:54.
Names only, among others, numbers 1534-1572.

1534 Andodonta Oregonensis Lea.
Synonymy:—A: Nuttalliana Lea.
1535 Angulus salmonea Cpr.
1536 Acmæa persona umbonata Nuttall.
1537 Acmæa testudinalis patina Esch.
1538 Variety **scutum** Esch.
1539 Variety **cumingii** Reeve.
1540 Cantharus gemmatus Reeve.
1541 Columbella carinata gausipata Gld.
1542 Glyphis aspera Esch.

1543 Helix californiensis Lea.
Type locality:—Point Cypress, Monterey, Cal.
"Shell subperforate, ventricose, subglobular, thin and transparent, shining, delicately indented and granulated, faintly but regularly striate, of a pale yellowish horn-color, minutely flecked with pale spots and girded by a narrow brown band, paler at its edges; spire elevated; whorls 5, convexly rounded, the last very broad, vesicular; base ventricose; aperture subcircular, silky and banded within; the peristome slightly reflected, thickened within, more everted towards its columellar margin, where it is roundly reflected, nearly covering a very small umbilical perforation. Greater diameter 19, lesser 16; height 15 mm."—W. G. Binney.

1544 Variety **Nickliniana** Lea.
An albino form noted. Santa Cruz to Mendocino Co., Cal.

1545 Helix arrosa Gould.
"Shell globose-conic, thick, umbilicated, indented, and minutely granulated; color reddish-olive, varied with yellow, and with a fuscous revolving band; whorls 7, convex; aperture roundly ovate; peristome reflected, flesh-colored; throat bluish. Diam. 40, height 18 mm.'—W. G. Binney.
Santa Cruz to Mendocino Co., Cal.

1546 Helix armigerus Ancey.

1547 Helix loricata Gould.
In the coast range and the Sierra Nevadas, from near San Francisco to Mariposa and Klamath counties, Cal.

1548 Ischnochiton cooperi Cpr.
1549 Lyonsia (Entodesma) saxicola Baird.
1550 Limax campestris occidentalis Cpr.
1551 Variety zonatipes Cockerell.
1552 Limnæa obrussa Say.
Synonymy: L: desidiosa Say.
1553 Limnæa humilis ferruginea Hald.
1554 Limnæa palustris Traskii Tryon.
1555 Variety **proxima** Lea.
1556 Variety **Nuttalliana** Lea.
1557 Variety **Rowellii** Tryon.
1558 Variety **umbrosa** Say.
1559 Limnæa bombycina Lange.
Introduced, San Francisco Co., Cal.
1560 Mytilus edulis glomeratus Gld.
1561 Mopalia ciliata Hindsii Sby.
1562 Pleurotoma Carpenteriana Gabb.
Synonym of Genota carpenteriana.
1563 Purpura saxicola ostrina Gld.
1564 Physa Gabbi D'Orbignyana Lea.
1565 Variety **Traskii** Lea.
1566 Physa virginea Gould.
1567 Scala Grœnlandica Perry.
1568 Saxicava arctica L.
The San Francisco specimens are perhaps pholadis L.
1569 Standella californica Conrad.
1570 Tapes staminea ruderata. See No 2179.
1571 Zonites cellarius Mull.
Berkeley, Cal. (Orcutt). Introduced, abundant.
1572 Pholadidea penita parva Tryon.

1573 Dore, Harry E.:
Mollusks in the Portland, Oregon, market. Nautilus 5:58.
Mentions Amusium caurinum Gld., Machæra patula, etc.

1574 Taylor, G. W.:
Land shells of Vancouver Island. Nautilus 5:91.
Mentions 32 species, numbers 652, 48? 1200, 6, 1198, 1199, 1195, 1196, 1209, 956, 957, 1204, 1205, 1203, 1029, 1206, 1207, 1063, 1128, 1080, 1083, 448, 1082, 1201, 1202, 28, 31, 1213, 1575-1577.

1575 Lysinœ fidelis Gray.
1576 Pupilla corpulenta Morse.
1577 Selenites sportella Gould.

1578 Prohysaon Andersoni marmoratus Ckl.
Wood, Nautilus 5:94 records this, Limax agrestis, L: maximus, and the two following numbers, from San Francisco Co., Cal., making a total of 126 species.

1579 Mopalia Wossnessenskii Swansii

1580 Acmæa fenestrata Nutt.

1581 Vallonia costata Muller.
Sterki, Nautilus 5:100, "Some notes on North American forms of Vallonia," mentions this among the other recognized species.

1582 Fissuridea saturnalis Cpr.
Santa Barbara and San Diego, Cal.

1583 Emarginula radiata Gabb.
Eocene, of California.

1584 Cemoria crucubuliformis Conr.
Miocene of California.

1585 Scaphella (Voluta) **Arnheimi**
"Shell regularly formed, elongate-ovate; body whorl more than 2-3ds as long as the spire; the spire an inch long, and made up of 6 whorls, the terminal nucleus being very small, pointed and oblique, which latter character places this species in the section Scaphella of Dall. Ground color obscure yellow, covered by a layer of chalk-like deposit. The body whorl has some coarse longitudinal elevations and depressions, remnants of former lip extensions, and there are 2 large patches of dark rusty red at a wide interval which do not appear to form an interrupted band. The aperture is elegantly formed and measures 1⅞ inches long by ⅞ inch wide. The inner lip is regularly outlined on the columella; columellar plaits 4, sharply oblique, the last one strongest, forming a prominent ridge parallel to the canal. The upper outlines of the mouth meet in a sharp angle, but the base has a well defined bifurcation. The whole of the aperture and the edge of the outer lip are heavily coated with enamel of a yellowish tint, and rust stained. Size 3⅛ inches long, and 1⅛ inches wide. Animal without operculum."—J. J. Rivers, Nautilus 5:111.
Type locality:—Monterey bay, Cal. (dredged).

1586 Paludina Japonica Mart.
Williard M. Wood, Nautilus 5:112, gives an interesting account of this snail in the San Francisco markets.

1587 Fluminicola Merriami Pilsbry & Beecher.
"Shell small, globose turbinate, narrowly but distinctly and deeply umbilicated. Spire low-conic, acute; whorls 4, slightly shouldered below the sutures, the upper-lateral portion rather flattened, periphery and base convex. Surface smooth, horn-colored. Aperture oblique, ovate, angled above, broadly rounded below; upper portion of the inner lip adherent to the body whorl, lower portion arcuate, without a callus thickening. Alt. 3, diam. 2.5 mm."—Pilsbry, Nautilus 5:143.
Type locality:—warm spring in Pahranagat Valley, Nevada (C. Hart Merriam).

1588 Patula strigosa Gould.
R. E. C. Stearns, Nautilus 6:1, records this from Coon Mt., Arizona, and discusses is occurrence.

1589 Sterki, V.:
Preliminary list of North American Pupidæ (north of Mexico). Nautilus 6:2. Enumerates the following West American forms, besides various species now included in Bifidaria, Vertigo, etc.

1590 Pupa (Pupilla) **muscorum** L.
Montana. A var. from Nevada.

1591 Pupa (Pupilla) **blandi** Morse.
Montana—Rocky Mts.

1592 Pupa (Pupilla) **signata** Mouss. Rocky Mts.

1593 Pupa hebes Ancey.
Shell rimate, cylindrical, bluntly rounded at both ends, thin, light chestnut colored, not glossy, very slightly striate; whorls 6½, the earlier 3 rapidly increasing, the rest of about equal width, quite convex, the last whorl ascending in front, its latter third somewhat compressed, the base showing a blunt projection when viewed in profile; a decided contraction behind the outer lip, but scarcely any crest; aperture truncate-oval, slightly oblique, without lamellæ or folds, though there is a slight projection on the columella, far within; peristome thin, narrowly expanded, not in the least thickened within; length 3.5, diam. 1.8 mm.—Pilsbry & Vanatta.
Type locality:—White Pine, Nevada.—Near Jerome, Arizona (Ashmun).

1594 Pupa (Pupilla) **sublubrica** Anc. Rocky Mts.
1595 Pupa (Pupilla) **sterri** Voith. (?Rocky Mts.)

1596 Pupa (Pupilla) **Sterkiana**
Pilsbry, Phila ac pr 1889, t 12, f 2-3.
Shell rimate, perforate when young, cylindrical, blunt at both ends, chestnut-brown; surface obliquely sculptured with strong, rather irregular costulæ, which often split or branch, suture very deeply impressed; whorls 7, the first one smooth, the last 5 of about equal diameter, very convex; last whorl a little ascending to the aperture, without crest or scrobiculation behind the peristome; aperture a trifle oblique, rounded, truncate above; lip expanded, continuous, thin, white, without teeth or folds; umbilicus deeply impressed, appearing very narrowly perforate. Alt. 4, diam. 1.5 mm. On Roccella leucophœa both north and south of San Quintin bay, Lower California (C. R. Orcutt No. 1322), and first distributed as P. chordata Pfeiffer. Named in honor of Dr. V. Sterki, whose special studies of these minute species has added much to our present knowledge.

1597 Pupa syngenes Pilsbry.
"Shell subcylindrical but wider above, composed of 8 narrow, convex whorls, sinistrally convoluted; texture as in P. muscorum, but color rather lighter brown. Last whorl ascending, imperforate, bearing a strong high crest just behind the outer lip. Aperture shaped as in muscorum, having a single small parietal denticle. Alt. 3.75, diam. 1 2-3 mm."—Pilsbry, Nautilus 4:3 (May 1890).
Type locality:—"Arizona.' Beaver Creek, Montana.

1598 Pupa (Leucochila) **fallax** Say.
All eastern U. S. to Arizona in the southwest.

1599 Pupa (Columella) **edentula alticola** Ing.
Rocky Mts. Another var. from Wash. and Alaska.

1600 Cockerell, Theodore D. A.:
Notes on the North American species of Succinea. Nautilus 6:21-23. 29-31. 7:43-46.
A valuable study, including some western forms.

1601 Cypræa Bayerquei
Cretaceous, of California, as also the next.
1602 Cypræa Matthewsonii
1603 Cypræa Squayerii Campbell, Nautilus 7:52, t 2 f 1-2.
Cretaceous, on the upper Missouri, Montana (Nautilus 6:50, nomen).

1604 Stearns, Robert Edwards Carter:
Preliminary descriptions of new molluscan forms from West American regions, etc. Nautilus 6:85-89.
Describes numbers 1605-1611.

1605 Uvanilla regina
Type locality:—Guadalupe Island, Baja Cal. (George D. Porter).—Also from San Clemente Island, Cal. (Chas. H. Lawrence). —Gulf of Cal.
Dall, Nautilus 24:111 as Tegula.
"Shell conical, imperforate, black or purplish-black; whorls 6 -7, concave, longitudinally somewhat obliquely plicated, the plicæ more or less projecting at the suture, and on the edge of the basal whorl, producing an undulating or crenulated effect. Otherwise sculptured by incremental striæ which traverse the surface and cross the plicæ at right angles. Base concave, radiately, closely and prominently striated, more conspicuous, flattened, coalescing, and sinuously curving at the edge. Commencing at the point where the outer lip joins the body whorl, a shallow groove follows parallel to the periphery and extends toward the aperture, without interrupting the basal sculpture. Aperture obliquely subangulate, black-rimmed and crenulated on the thin edge of the outer lip; nacreous, silvery white toward the edge, bright lustrous golden yellow within and around the umbilical region, which latter though deeply pitted is not open. Columella white, calloused, arcuated with a moderately developed rib bounding the umbilical depression, and terminating in a single tubercle. This rib is paralleled by a shallow furrow terminating in a notch just below the tubercle, and by an exterior or outer ridge, part of the way double, of a brilliant orange color; this orange-colored rib is also exteriorly bounded by a shallow furrow which becomes obsolete toward the aperture. The base of the shell otherwise exhibits faint revolving sculpture. Dimensions: Altitude, 36 mm., diameter maximum, 34 mm. The above combines the sculptural features of the Japanese Chlorostomas and West Mexican Uvanillas, more particularly U. olivacea. It is a much handsomer shell than the latter and the most northerly form of the group yet detected on the west coast."—Stearns, Nautilus 6:85-86.

1606 Chlorostoma gallina multifilera
Type locality:—Guadalupe Island, Baja Cal. (Geo. D. Porter).
1607 Bulimulus (Pleuropyrgus) Habeli
Chatham Island.
1608 Orchidium Lesliei
Chatham and Albemarle Islands.
1609 Litorina (Tectarius) Galapagiensis
James Island.

1610 Nitidella incerta
Galapagos Islands.

1611 Litorina (Tectarius) atyphus
Manta, Ecuador.

1612 Nassa brunnesostoma
Type locality:—near the mouth of the Colorado river, Gulf of Cal. (Edward Palmer).
Described by Stearns, Nautilus 7:10.
1613 Williamson, M. Burton:
Edible mollusks of southern California. Nautilus 7:27.

1614 Yoldia Montereyensis
"Shell large, stout, inflated, with a polished, dark greenish olive epidermis; beaks eroded in all the specimens, situated in the anterior part of the middle third of the shell, not prominent; valves full and rounded, anterior end evenly rounded into the upper and basal margins; posterior end narrower, rounded, the extreme end nearer the cardinal margin with which it almost forms an angle, below sloping obliquely toward the basal margin, with a very obscure broad ray impressed in a radiating manner from the beaks toward the oblique slope, the profile of which it does not perceptibly indent; surface sculptured only by feeble incremental lines; epidermis polished with 1 or 2 darker concentric color zones and a microscopic, irregular, radially disposed wrinkling, most conspicuous at the margins of the impressed ray; posterior cardinal margin nearly straight, anterior ditto evenly rounded; interior porcellanous white, the pallial sinus not reaching the middle vertical line of the shell, broad and rather rounded; ligamental fosset large, cup-like; anterior teeth V-shaped, about 22 in number, strong and prominent; posterior teeth similar, and forming an equally long line but only 18 in number, the posterior cardinal margin showing a long narrow impressed area very feebly marked; length of shell 32; beak from anterior end 12; vertical from beak to base 17; max. diam. 13 mm."—Dall, Nautilus 7:29.
Type locality:—Monterey bay, Cal., in 382 fms.

1615 Acanthochites exquisitus
Type locality: Los Animas bay, Gulf of Cal. (see Nautilus 7:95).
"Visible portions of the valves extremely narrow, generally less than ¼ the entire width of the dried animal. Valves dark olive, interior blue; the girdle light green, tufts very large, either green, pink or bronze; fleshy covered with a green pubescence. Length 30, breadth 18 mm. The valves are more covered than in any other form, the tegmentum being far less in area than one of the sutural laminæ."—Pilsbry, Nautilus 7:32.
1616 Genus Anadenus
"Animal limaciform, subcylindrical, tapering behind; tentacles simple; mantle anterior, concealing an internal shell-plate; no longitudinal furrows above the margin of the foot, and no caudal mucus pore; a distinct locomotive disk; external respiratory and anal orifices on the right posterior margin of the mantle; orifice of combined genital system behind and below the right eye peduncle. Internal shell-plate small, oval, flat, with posterior nucleus and concentric striæ. Jaw with numerous ribs. Lingual membrane with tricuspid centrals, bicuspid laterals and quadrate marginals."—Binney.

1617 Anadenus cockerelli H. Hemphill.

"Length contracted in alcohol 13.5 mm. Mantle 4.5 long, 2.75 wide. End of mantle to end of body 8. Foot 2 wide. Foot with a locomotive disk, being distinctly differentiated into median and lateral tracts. Respiratory orifice slightly posterior, on right edge of mantle. Genital orifice below right tentacle. No caudal mucus pore. Locomotive disk narrow, only half the width of the lateral areas. Sides of foot wrinkled, but not differentiated from lateral areas, nor specially marked, the wrinkles being a continuation of the transverse grooves of the lateral areas. Mantle tuberculate rugose, oval in outline, bluntly rounded at either end, not grooved as in Amalia. Mantle free in front as far as respiratory orifice. Back rather bluntly keeled its whole length; rugæ rather flattened and obtuse, consisting of grooves inclosing mostly hexagonal lozenge-shaped spaces, which are themselves rugose. Color, uniform brown-black without markings, except some dark marbling on the lighter sides. The portion beneath and in front of the mantle is pale, and the head and neck have a gray tinge. Foot brown. Internal shell solid, easily extricated without breaking. Jaw wide, slightly acuate, ends blunt, anterior surface with about 20 wide flat ribs, squarely denticulating either margin. Lingual membrane short and narrow. Teeth 20-1-20, of which 8 only on either side are laterals. Centrals tricuspid, laterals bicuspid, marginals quadrate, bluntly bicuspid."—Henry Hemphill, Nautilus 4:2 (May 1890).

Type locality:—Cuyamaca Mts., San Diego, Cal.

1618 Genus **Prophysaon**

1619 Raymond, W. J.:
Why does Prophysaon shed its tail? Nautilus 4:6.

1620 Wood, Williard M.:
On a collecting trip to Monterey bay. Nautilus 7:70.

1621 Monks, Sarah P.:
San Pedro as a collecting ground. Nautilus 7:74.

1622 Taylor, George W.:
Land and fresh water shells in the Rocky Mountains. Nautilus 7:85.

These faunal lists and notes will be useful to those wishing to pursue special studies, and are thus noted for the convenience of the student.

1623 Taylor, George W.:
Notes on a collecting trip to Departure bay, Vancouver Island. Nautilus 7:100.

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1624 Raymond, W. J.:
The California species of the genus Nuttallina. Nautilus 7: 133. Discusses distribution of N: Californica Nutt. and N: scabra Reeve.

1625 Mactra catilliformis Dall.

Shell large, thin, whitish or straw color, irregularly concentrically striated, with a gray, wrinkled epidermis, inflated short-oval subequilateral valves and closely adjacent inconspicuous beaks; anterior end of shell evenly rounded in front, a little shorter than the posterior end; lunule narrow, impressed, escutch-

eon narrow, longer, rather obscure; posterior end of valves rounded, slightly compressed and with a narrow gape when closed; hinge resembling that of M. polynyma Stm., but more concentrated, cartlage pit large, rather produced; posterior muscular impression larger, pallial sinus rather large, rounded in front. There is a faint posterior flexure of the valves and a feeble marked area above it, on which the epidermis is more conspicuous. Lon. 108, alt. 87, diam. 45 mm. in a moderately sized pair, but the adult reaches 140 mm. in length."—Dall, Nautilus 7:137, t 5 f 3.

Neeah bay, Wash., to San Diego, Cal.

Synonymy:—Standella Californica Cpr. (not Conr. or Desh.).

1626 Mactra Hemphillii Dall.

"Shell large, thin, inflated, subequilateral, creamy white with a yellow thin epidermis, which over the body of the shell in young shells is beautifully evenly concentrically striated and on the posterior dorsal area is irregularly wrinkled, with an elevated raphe of epidermis at the margin of the area; beaks rather prominent, the anterior end of the valves longer than the posterior; posterior dorsal slope excavated; lunule obscure, escutcheon marked by prominent elevated radial lines of epidermis; the dorsal margin pouting in front of the ligament, the posterior slope convex, the posterior flexure faint, but marked by a recession of the ventral border of the valves, which gape but very little and not at all in front; anterior end rounded, but smaller than the posterior; ventral border arcuate; hinge and pallial sinus much as in the last species, except that the sinus is somewhat smaller and less depressed. Lon. 120, alt. 93, diam. 50 mm."—Dall, Nautilus 7:137 t 5 f 2. Section Standella.

Type locality:—San Diego, Cal. (Hemphill, Cooper).

1627 Mactra dolabriformis Conrad, 1867.

"Shell much compressed, polished white under a dull epidermis, subequilateral with inconspicuous beaks. It closely resembles M. falcata Gld. (from type) but has higher beaks more centrally set, the anterior end more attenuated and less truncate, the left anterior lateral tooth single and distally more prominent; the left cardinal larger and wider; the posterior adductor scar horizontally elongate and smaller. Lon. 90, alt. 63, diam. 26 mm."—Dall, Nautilus 7:138 t 5 f 1.

San Diego, Cal. Guaymas, Son., Panama (Conrad).

1628 Mactra polynyma Alaskana

Dall, Nautilus 7:138 suggests this varietal name for the northern shell generally referred to M. falcata.

1629 Mulinia modesta Dall, Nautilus 8:5 t 1 f (lower).

Type locality:—Guaymas, Son. (Sloat).

1630 Mulinia coloradoensis Dall, Nautilus 8:6, t 1, upper f.

Type locality:—Head of the Gulf of Cal. (Edward Palmer).

1631 Variety **acuta** Dall. Nautilus 8:6 t 1 left f.

"With the typical form, common."

1632 Mulinia Bradleyi Dall, Nautilus 8:6.

Type locality:—Panama (Bradley).

1633 Urosalpinx cinereus

Introduced from the Atlantic into the oyster beds in San Francisco bay, Cal. (see Stearns, Nautilus 8:13).

1634 Helix (Arionta) coloradoensis

"Shell orbicular, moderately depressed, whorls slightly elevated, apex obtuse, whorls 4-4 and a half, rounded. Umbilicus narrow, showing the penultimate whorl, though partially covered by the reflection of the lip at the point of junction with the base of the shell. Aperture obliquely ovate, nearly circular, and almost as broad as high. Lip slightly thickened and reflected, or sim-

ple, varying in this respect; more reflected and aperture more effuse at the columella. Parietal wall in the heavier examples calloused, the callous connecting with the inner edges of the outer lip above and below. Shell rather fragile, thin, translucent, surface smooth and shiny, and sculptured with fine incremental lines. color pale horn to white, and otherwise marked by a single narrow revolving reddish-brown band just above the periphery, which in some specimens is obscure or absent. In some individuals certain faint scars upon the upper whorls imply an occasionally hirsute character. Max. diam. of largest 15.25, of smallest adult 13.75; Min. diam. of largest 13.25, of smallest 12, Alt. of largest 10.25, of smallest adult 8.75 mm."—Stearns, U. S. Natl mus pr 13:206, t 15, f 6-8.

Type locality:—Grand canyon of the Colorado, opposite Kaibab plateau, at an elevation of 3,500 feet (C. H. Merriam).

Stearns, Nautilus 8:29 records from Resting Springs, Inyo Co., Cal. (Vernon Bailey), and Mountain Springs, San Diego Co., Cal. (C. R. Orcutt).

1635 Mactra (Mactroderma) velota Phil. 1848.
Gulf of Cal. to Panama.

1636 Mactra (Mactrotoma) nasuta Gld. 1851.
Baja Cal. to west Columbia.
Synonymy: M. californica Desh. (not Conr.).—M. hiantina Desh. etc.

1637 Mactra (Mactrella) exoleta Gray, 1837.
Gulf of Cal. to Guayaguil.

1638 Mactra (Mactrella) elegans Sby. 1825.
Gulf of Cal. to Panama.

1639 Spisula (Hemimactra) catilliformis Conr. 1867.
Neeah bay, Wash., to San Diego, Cal.
Synonymy: Standella californica Cpr. not Conr.—Mactra catilliformis Dall.

1640 Spisula (Hemimactra) Hemphilli Dall. 1894.
San Diego, Cal.

1641 Spisula (Hemimactra) planulata Conr. 1837.
Monterey to San Diego, Cal.
1642 Spisula (Hemimactra) polymyma Stm. 1860.
1643 Variety **alaskana** Dall, 1894.
Icy Cape to Neeah bay, Wash.
1644 Mulinia palida Brod. & Sby. 1829.
Cape San Lucas to Panama.
1645 Mulinia Gabbi Tryon. 1869.
Lower California. Near M. exalbida Gray, of South America (Dall).
1646 Gnathodon (Rangianella) mendicus Gld. 1851.
Estuaries, Gulf of California.
1647 Labiosa anatina Spengler. 1802. West Mexico.

1648 Tresus Nuttallii Conr. 1837.
Sitka, Alaska to San Diego, Cal.
Synonymy: Lutraria maxima Midd. 1849, non Jonas 1844.—L. capax Gld. 1850.—L. inflata Dunker, 1853.

1649 Trachydermon (Cyanoplax) Raymondi

"Shell longer and narrower than T. Hartwegii. Back somewhat keeled, varying in elevation. Color (1) olivaceous green mottled with white, sometimes with dark lateral streaks as in Hartwegii, sometimes ruddy at the ridge, or (2) uniform blackish, or (3) dark brown, uniform or with whitish flecks. Valves rather strong, slightly beaked when unworn, the posterior (sutral) margins straight or slightly concave. Intermediate valves rather rounded where they join the girdle, scalloping the inner border of the latter; not distinctly divided into areas. Lateral areas hardly or not raised (the diagonal being indistinct) evenly sculptured with minute, equal granules. Central areas also evenly sculptured throughout with similar granules, slightly finer on the ridge. End valves with the same equal sculpture, the tail valve with the mucro central and a little projecting. Interior light blue, with darker stains at bases of the sutural laminæ and behind the rather strong blue-white valve callus. Sinus and sutural laminæ as in Hartwegii. Slits in valve i, 8; valves ii-Vii, 1-1; valve viii, 11; teeth of end valves blunt, thick, but not distinctly bilobed. All teeth longer than the narrow, porous eaves. Girdle narrow, black, or with small whitish spots, leathery, very minutely papillose. Length (of type) 23, breadth 11 mm."Pilsbry, Nautilus 8:46.

Type locality:—San Francisco, Cal. Also Purissima and Monterey, Cal., and Victoria, B. C. (C. F. Newcomb).

Specimens from Bolinas, Cal., measure 12.5 mm. long, 7 wide.

Named in honor of W. S. Raymond.

1650 Trachydermon Hartwegii

Pilsbry, Nautilus 8:45, discusses the relationship of this chiton, referred by its author both to Chætopleura and this genus.

1651 Pupa blandi edentata

Recorded from Mingusville, Montana, by Homer Squyer, Nautilus 8:64, in a list of shells from that vicinity.

1652 Pupa Holzingeri Sterki.

Mingusville, Mont. (Squyer).

1653 Pupa decora Gould.

Mingusville, Mont. (Squyer).

1654 Vitrea arborea Say.

Mingusville, Mont. (Squyer), a "var. approaching V. breweri Newc."

1655 Vitrea radiatula Alder.

Mingusville, Mont. (Squyer), "rare."

1656 Vallonia gracilicosta Reinh.

Mingusville, Mont. (Squyer), and a var. near costata Say. Utah. Dakota.

1657 Vallonia perspectiva Sterki.

Mingusville, Mont. (Squyer). Tenn. Ala. Iowa.

1658 Planorbis umbilicatellus Cockerell.

Synonymy:—P. umbilicatus Taylor non Mull.

Manitoba (type). Montana (Squyer), Colo. Iowa. Minn. See Nautilus 9:117.

1659 Ancylus rivularis Say.

Shell delicate, moderately elevated; sides slightly convex, diverging anteriorly; posterior and dextral slopes concave, anterior slope convex, and sinistral one nearly rectilinear; apex subacute, projecting, 1-3d of the shell posterior to it. Color light brown; nacre, in large individuals, white. Lon. 5, lat. 3.5. elev. 2mm.

Delaware and Susquehanna rivers.—Montana (Squyer).

1660 Anodonta ovata Lea.

1661 Anodonta plana Lea.

Squyer records these two from Montana.

1662 Doridium Adellæ Dall.

"Animal naked, about 16 mm. long, of a dark plum color, mottled with fine vermiculate spots of golden yellow; general form that of D. carnosum Cuvier, but with a shorter velum, half as long as the body and transversely truncate behind; the posterior portion of mantle short, obscurely bilobed, and without a flagellum; front edge of the velum slightly excavated; parapodia wide, the sole slightly longer than the body; shell internal, subconical, white covered with a brownish epidermis; pillar strong, reflected with a deep groove outside of it, the basal end projecting spur-like; nucleus small, depressed."—Dall, Nautilus 8:73.

Type locality:—Eagle Harbor, Puget Sound, in 30 fms. (Miss Adella M. Parker).

1663 Genus Epiphragmophora Doering 1875.

Pilsbry (Nautilus 8:81) states this is the earliest name used for Arionta, Aglaia and Euparypha of American writers.

1664 Epiph. ellipsostoma Pilsbry, Nautilus 8:81.

Type locality:—"San Juan del Norte" (Gabb), probably on the east coast of Lower California.

1665 Lepidopleurus percrassus

"Shell solid, strong, small, of a pale pinkish-brown with a darker brownish girdle which appears rather narrow in the dry state; scales very minute, partly dehiscent, chaffy, with occasional slender spinules resembling hairs; scales on the base crowded, minute, sandy; an extension of girdle is prolonged between the valves on each side as far as the jugum, the surface of these sinuses is also minutely scaly with occasional spinules; valves thick, white below, moderately arched with the prominent jugum forming a sort of keel; near the points of insertion the valves are heavily callous below; the sutural laminæ are short, smooth and separated at the median sinus by a prolongation of the jugum in advance of the anterior margins of the pleuræ; sculpture of the jugum consisting of punctate fore-and-aft parallel grooves with some small elevated transverse ridges anteriorly; the rest of the valve has, on each side, 6 or 8 vermicular ridges divaricating toward the posterior edge of the valve and irregularly corrugated with sharp, fine, elevated lamellæ crossing the interspaces transversely but fading out on the ridges; head-valve with minutely nodulous concentric ridges; tail-valve highest at the subcentral, not very prominent mucro, in front sculptured like the intermediate valves, behind the mucro like the head-valve. Length about 14, width 5.75, height 2.5 mm., in the dry state. The dry girdle about 0.5 mm. wide."—Dall, Nautilus 8:90.

Type locality:—Off San Pedro, Cal., in 75 fms. (T. S. Oldroyd).

1666 Olivella gracilis Gaylordi

Ford, Nautilus 8:104, named a new variety from the Gulf of Cal. for Mrs. E. M. Gaylord.

1667 Holopira pasonis

Dall, Nautilus 8:112, El Paso Co., Texas.

1668 Unio Oregonensis Lea.

In the Nautilus 8:116 it is shown that this is a synonym of U. Rowelli Lea, a species of the Central American region. No Unios are known from west of the Rock Mountain chain, so that all references to the Columbia river or Oregon are erroneous.

1669 Pyramidula Randolphii

"Shell minute, reddish brown, with dull silky lustre, elevated, with 3½ rather inflated whorls; sculpture only of fine incremental lines, barely perceptible under an ordinary triplet lens; suture deep, periphery rounded, slightly less so in the immature shell, but seemingly never angular; aperture obovate, somewhat oblique, wider than high, the body segment about 1-3d of the whole; top dome-like, base full, umbilicus small, subcylindric, deep. Alt., 0.75. max. diam. 1.4, min. diam. 1.25 mm."—Dall, Nautilus 8:130.

Type locality:—Seattle, Wash. (P. B. Randolph).

In Nautilus 9:18 this is pronounced a Punctum.

1670 Patulastra? pugetensis

"Shell minute, pale greenish yellow, nearly smooth, the first whorl and a half smooth, the others with fine, silky, close-set, hardly elevated lines or minute regular riblets, somewhat flexuous and in harmony with the incremental lines; form moderately elevated, the whorls inflated with a deep suture, and, in the adult, rapidly enlarging near the aperture in the latter part of the last whorl; aperture large, quite oblique, almost circular, the segment of the body between the two lips about 1-6th of the whole; umbilicus ample, scalar, exhibiting part of all the whorls which make, in adults, from 3 to 3¼ volutions. Alt. 0.5, max. diam. 1.5, min. diam. 1.2 mm."—Dall, Nautilus 8:130.

Type locality:—Seattle, Wash. (P. B. Randolph).

Nautilus 9:18 this is pronounced a Zonites.

1671 Ocinebra circumtexta aurantia

Stearns, Nautilus 9:16, coast of Los Angeles Co., Cal., of a pale orange color, with bands of a deeper orange.

1672 Vallonia minuta Say.

Synonym of V. pulchella Muller.

1673 Vallonia excentrica Sterki.

All Europe. Quebec to Washington, D. C.

1674 Vallonia albula Sterki.

Quebec; Manitoba; British Columbia.

1675 Vallonia parvula Sterki.

Ill., Nebr. and Indian Territory.

See Sterki, Phil ac pr 1893:234 and Nautilus 9:16, for observations on this genus.

1676 Vitrea Johnsoni

"Shell small, pale waxen white or translucent, of 3½ whorls, rather rapidly enlarging, smooth except for delicate radial lines of growth which are occasionally visible; suture distinct, slightly impressed; spire hardly elevated but not flattened; periphery rounded, base convex, imperforate, the pillar lip strongly reflected close to the axis; aperture semilunar, sharp edged, the peristome hardly flexuous, the upper edge a little in advance of the lower; resting stages indicated internally by 1 or 2 narrow whitish streaks where the shell is slightly thickened, but which do not project internally. Height of shell 1, major diam. 2, minor diam. 1.5 mm."—Dall, Nautilus 9:27. Named in honor of Prof. O. B. Johnson.

Type locality:—near Seattle, Wash. (P. B. Randolph).

1677 Vitrea pugetensis

Near Seattle, Wash. (P. B. Randolph).

1678 Vitrea subrupicola

Clinton's Cave, Utah (Dr. Packard).

1679 Variety **spelea** Dall, Nautilus 9:27.

Cave City, Calaveras Co., Cal. (Hemphill). Larger than typical form.

1680 Planorbis centervillensis Tryon.

Shell small, of 4 rather elevated whorls, well rounded, slightly angled on the periphery, suture well impressed, umbilicus narrow and deep; aperture slightly dilated, quite oblique. Diam. 4, alt. 1.5 mm.

Type locality:—Centerville, Cal. Widely diffused on the Pacific coast, often confused with vermicularis Gld.

1681 Drake, Mrs. Marie:

Marine shells of Puget Sound. Nautilus 9:38.

1682 Planorbis callioglyptus

"Shell thin, yellowish corneous. Upper side flat, only a trifle concave in the middle; lower side convex; periphery very bluntly indistinctly angular, and midway between periphery and suture there is a slight angle; but both angles are obsolete at aperture; base often spirally malleated. Surface with a beautiful sculpture of fine spiral incised lines, crenulated by fine growth-lines. Whorls nearly 4. Umbilicus nearly a third the shell's diameter, deep and funnel-shaped, its edge bluntly angular. Aperture ovate truncate, moderately oblique. Lip not thickened inside. Alt. 3, diam 8 mm."—E. G. Vanatta, Nautilus 9:54.

Type locality:—Freeport, Wash. (Hemphill).

1683 Planorbis opercularis oregonensis

"Shell light yellowish, opaque. Upper surface flattened, slightly convex, the apex sunken; periphery keeled with a slight groove above the keel. Surface finely spirally striated. Umbilicus rather small and deep, its edge slightly angular. Aperture approaching vertical, lip thickened within. Alt. 2, diam. 6 mm."—E. E. Vanatta, Nautilus 9:54.

Type localities:—Salem and Portland, Oregon.

1684 Epiph. californiensis contracostæ

"Smaller than var. diabloensis, but of the same depressed

form; light yellowish straw-colored, with or without a dark band; surface rudely striate and cut by irregular spirals into small granules; not malleated or slightly so. Whorls 5½; outer lip thickened, hardly expanded, white, basal lip expanded and a trifle impinging on umbilicus, which is deep and rather widely open, somewhat as in Polygyra kiawaensis."—Pilsbry, Nautilus 9:72.

Type locality:—Byron Hot Springs, Contra Costa Co., Cal.

1685 Epiph. Remondi Tryon.

Synonymy:—Helix verrilli Ancey, conch. Esch.

1686 Dolabella californica Stearns.

Pilsbry, Nautilus 9:73, description of alcoholic specimens.

Type locality:—Mulege bay, Gulf of Cal. (W. J. Fisher).

Stearns, Phila ac pr 1878:395 t 7 f1-2.

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1687 Roper, Edward W.:

Notes on the Washington Sphæria and Pisidia, with descriptions of new species. Nautilus 9:97-99. Mentions Sphærium occidentale, raymondi; Pisidium idahoensis, variabile, compressum, abdition, ultarmontanum, and numbers 1688-1691.

1688 Sphærium primeanum Classen.

Shell large, equilateral, dark brown or black with lighter, beaks, shining. Outline rhomboidal, a little more elongated and the ends more rounded than S. rhomboideum Say, but the dorsal aspect very much like that of the species. The full, rounded beaks make the vertical section broadly cordate. One specimen, chestnut colored and with yellow border, is so close to S. rhomboideum as to be held in doubt."—Roper.

1689 Sphærium dentatum Hald.

Spokane Falls, Wash. (Mrs. Mary P. Olney), "handsome, bright green shells, differing only in color from brownish Oregon specimens, are doubtfully referred here" (Roper).

1690 Sphærium nobile Gould.

Abundant in small streams, Seattle, Wash. (Roper).

1691 Pisidium Randolphii Roper.

"Shell rounded oval, moderately inflated, anterior end elongated and perfectly rounded, no angle indicating the junction of the anterior and basal margins; posterior margin sloping abruptly from the very short hinge margin; beaks decidedly posterior, fairly prominent; surface very finely and evenly striated, polished, of a most peculiar greenish-yellow color, different from other Pisidia, but much like some Corbiculas. Lon. 0.18, lat. 0.14, diam. 0.1 inch."—Roper.

Type locality:—Seattle, Wash.

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1692 Randolph, P. B.

Shells of Seattle, King Co., Wash. Nautilus 9:101.

1693 Sterki, V.

Small land mollusca from New Mexico. Nautilus 9:116.

1694 Leda cellulita Dall.

Type locality: Puget Sound, near Port Orchard, Wash.

"Shell solid, with a dull olive-gray epidermis, moderately convex, with subcentral, not prominent beaks, base profoundly arcuate, anterior dorsal slope rounded, posterior straight or slightly

concave; posterior extreme bluntly pointed; escutcheon large, transversely striate; lunule not differentiated but similarly striate; sculpture of fine sharp, concentric grooves with wider interspaces, less arcuate than the incremental lines; chondrophore small, triangular, not projecting, with 22 anterior and 16 posterior hinge teeth on the cardinal border. Height 10.5, diam. 7.2, length 15.5 mm."—Dall, Nautilus 10:1.

1695 Leda leonina Dall.

"Shell rather thin, compressed, with the low beaks at the anterior 3d; base slightly arcuate, anterior end rounded, posterior dorsal slope concave, lunule and escutcheon narrow, elongate, strongly impressed, smooth, with the valve margins elevated; rostrum broadly and a little obliquely truncate; sculpture of thin sharp concentric lamellæ strongest on the rostrum, epidermis dull olive-gray, dehiscent; hinge with 22 anterior and 28 posterior teeth, the chondrophore small, inconspicuous. Height 11, length 23.5, diam. 5.25 mm."—Dall, Nautilus 10:2.

Type locality:—off Sea Lion Rock, Wash., in 477-559 fms.

1696 Leda conceptionis Dall.

Shell elongate, smooth, polished, compressed, with the beaks in anterior 3d; base arcuate, prominent below the beaks; anterior dorsal slope slightly rounded, posterior slope straight, rostrum narrow, pointed, obliquely truncate, cardinal margin elevated between the halves of the narrow impressed, almost linear lunule and escutcheon; beaks very small, low, the prodissoconch conspicuous; hinge with 18 anterior and 33 posterior small and delicate teeth; the chondrophore narrow, produced posteriorly; interior of the rostrum without a longitudinal septum. Height 10.5, length 27.5, diam. 4.5 mm."—Dall, Nautilus 10:2.

From Sannakh Islands, Alaska, to the Santa Barbara channel in 200-500 fms., especially off Point Conception, Cal., in 278 fms.

1697 Leda pontonia Dall.

Off San Diego, Cal., in 822 fms. Galapagos Isl. in 812 fms.

1698 Punctum conspectum Pasadenæ

"Shell resembling P. conspectum Bland, but more widely and openly umbilicated, and without spaced riblets, or with them very slightly indicated."—Pilsbry, Nautilus 10:21.

Type locality:—Pasadena, Cal. (Delos Arnold).

Treated later as a valid species.

1699 Newcombe, C. F.

Some new or rare species of marine mollusca recently found in British Columbia. Nautilus 10:16-20.

Extends the known range of several Californian species.

1700 Mopalia imporcata Cpr.

Pilsbry, Nautilus 10:49, describes a color variety, larger than the type, from San Pedro, Cal. (T. S. Oldroyd), as follows:—"The single specimen measures 9 by 18½ mm., and is somewhat more elevated than the type; color pale olivaceous, white toward the girdle, speckled on the ribs of lateral areas with brown, and with a brown patch on each pleural tract. The teeth are very distinctly thickened along the outer edge of the slits, as in the typical Callistochitons. Sculpture typical."

1702 Ischnochiton scabricostat Cpr.

Pilsbry, Nautilus 10:49, describes a form from San Pedro,

Cal. (T. S. Oldroyd), as follows: "Lateral areas with 4 (on one side of valve ii, 5; on one side of valve iv and v, 3) radial riblets, which are very weakly, hardly perceptibly, granose. Sutures very feebly crenate. Anterior and posterior valves with 9 slits each. Color reddish (but not at all of an orange cast), with a few inconspicuous white spots on some of the lateral areas.

Type locality:—Catalina Island, Cal. Type was orange with some dark sutural dots, and the lateral areas 3-ribbed, some low pustules on the ribs.

1702 Ischnochiton scabricostata Cpr.

Type locality:—Long Beach, Cal. (Miss Ida M. Shepard).

"Similar to C. decoratus in sculpture of end valves and lateral areas; but the central areas have no wide, smooth triangle at the ridge, such as types of C. decoratus have (Man. Conch. 14: t 58 f 18); being somewhat irregularly pitted towards the beaks, and with rows of pits on each side of a small oblong tract at the ridge; most valves pitted also on the ridge anteriorly."—Pilsbry, Nautilus 10:50.

1703 Trachydermon Sharpii

Pilsbry, Nautilus 10:50, describes this from Unalashka (Dr. Benj. Sharp).

1704 Pisidium scutellatum

Sterki, Nautilus 10:66, describes this as new, giving the center of its distribution as the Great Lakes, ranging from Mich. to Shendon, Mont., 9000 ft. elevation (Roper). Roper's specimens are said to differ in some details.

1705 Leda taphria Dall.

Dall substitutes this name for Hinds' preoccupied L: cælata, in Nautilus 10:70.

1706 Sphyradium edentulum

Sterki, Nautilus 10:75, based on Pupa edentula Drap. (Vertigo simplex Gld.).

1707 Bulimulus hypodon

1708 Bulimulus lamellifer

Pilsbry, Nautilus 10:102 describes these two as new, from Lower California.

1709 Vertigo coloradensis

Cockerell, Nautilus 10:134 discusses this and its allies.

1710 Planorbis nautileus L.

Taylor, Nautilus 10:139 treats of the record of the distribution of this European shell in America, from Ontario to Alberta, etc.

Synonymy:—P. costatus De Tarr & Beecher.

1711 Pupa Gabbii mexicanorum

Type locality:—"rejectamenta of the Rio Grande at Mesilla, N. M."

"It is 3½ mm. long, diam. 1½ mm., white, delicately but distinctly ribbed, the ribs filiform, 4 of them entering the parietal wall of the aperture. The aperture is rather narrow, with the outer margin somewhat flattened, and inclined to be elbowed above. The peristome is quite thick."—Cockerell, Nautilus 10: 143.

1712 Polygyra rhyssa

Type locality:—White Mts., N. M. (Ashmun).

Dall, Nautilus 11:2, describes as new.

1713 Holospira (Haplostemma) Hamiltoni

Dall, Nautilus 11:38. Rio Grande Mts., Brewster Co., Texas,

3500 ft., living on Selaginella lepidophylla Spring (Jas. M. Hamilton).

1714 Pilsbry, Henry A.:

A classified catalogue of American land shells, with localities. Nautilus 11:45-48.

The following (numbers 1715-1939) not previously mentioned in this list under names adopted by Pilsbry, are reprinted from his catalog.

1715 Helix aspersa Mull.

Introduced from Europe; first discovered in America at Charleston, S. C.; later at New Orleans, La., Santa Barbara, Santa Clara, and San Jose, Cal., and abundant in Mexico City, Mexico. Abundant in gardens in San Diego, Cal.

1716 Lysinœ Humboldtiana

Altuda, Texas. Mexico.

Genus **Epiphragmophora** Doring, 1875.

Subgenus Monadenia Pilsbry, 1895.

1717 E: fidelis

Humboldt and Shasta Co., Cal., to Vancouver Island.

"Helix (Aglaja) fidelis, Gray.—I have received from Washington Territory, a very large and fine variety of this species, which is entirely white, save a dusky area around the umbilical region. In every other particular, it accords with the magnificent typical specimens found there. As I had noticed upon living examples of this species, and of the H. infumata, particles of pitch or resin adhering to the shells, I naturally concluded that these mollusks inhabited the pine trees. In answer to my inquiry as to the station and habit, my friend replies: 'H. fidelis is a tree-climber, ascending the trees to a height of 30 or 40 feet. We capture them in May and June when they are depositing their eggs in the damp moss at the roots of trees and other favorable places.' As neither Mr. Binney nor Mr. Bland had seen the albino variety of this shell, until I sent it to them, and as it may be new to other collectors, I put it upon record in this manner."—A. G. Wetherby, Cincinnati society of natural history, J.

1718 Forma **flava** Hemphill.

1719 Forma **minor**

1720 Variety **subcarinata** Hemphill.

1721 Variety **infumata** Gould.

Coast countries of Cal., from Siskiyou to Alameda.

1722 E: mormonum

Shasta, Tulare and Santa Barbara counties, Cal.

1723 E: Hillebrandi

Calaveras, Tuolumne and Mariposa counties, Cal.

1724 Epiphragmophora circumcarinata

"Or near Columbia, Tuolumne Co., Cal." (see Nautilus 16: 61, 62).

"Helix, variety circumcarinata. Shell widely umbilicated, discoidal, flattened, angulated, with a peripheral keel; whorls 6-6½, slightly tabulated near the sutures, which latter are deeply impressed; surface finely granulated, varying in different specimens; and otherwise sculptured by conspicuous sub-acute ribs parallel with the lines of growth both above and below, which meet, and sometimes cross, the peripheral keel; these ribs are more or less irregular and uneven, of varying prominence, and are also unequally spaced, being closely crowded in some places and farther apart in others. Aperture obliquely subangulate, semilunate; peristome moderately thickened, reflected somewhat, covering the open umbilicus, and made continuous by a connecting thin deposit of callus on the labium. Color, in some specimens,

dingy white to white, in others a dingy reddish white, ornamented with a double revolving band,—the upper stripe being whitish, the lower reddish or light chestnut just above, and contiguous to the peripheral keel; the pinch or fold of the keel taking up what in Helix Mormonum is the third or lower stripe of white. Number of specimens 4, 2 adult and 2 immature, but nearly full grown. Dimensions—Greater diameter .92-1.01; lesser diameter .75-.86; height .36-.37 inch. Animal not observed. Habitat, Stanislaus county, near Turloch, California. For the specimens from which the above is written, I am indebted to Mr. A. W. Crawford, of Oakland, who has examples in his collection; specimens are also contained in the typical collection of my friends Binney and Bland, and in my own museum. Most authors would regard the above as a distinct and well marked species; I regard it (as well as H. Hillebrandi, of Newcomb) as a varietal form of Helix Mormonum, to which it is a near neighbor, inhabitating the same region."—Robert E. C. Stearns, Annals N Y ac 1:—N 1879), 3 f.

1725 E: Dupetilhouarsi
Monterey, Cal.

1726 E. sequicola
Santa Cruz Co., Cal.

1727 E: Ayresiana
Santa Cruz, San Miguel, San Clemente, and Santa Rosa Islands, Cal.

1728 E. Traskii
Los Angeles; Ft. Tejon; San Luis Obispo; San Diego, Cal. Lower Cal.

1729 Variety proles Hemphill.
Fraser's Mills, Tulare Co., Cal.

1730 Variety **Cuyamacensis** Hemphill.
Cuyamaca Mt., San Diego Co., Cal. (Hemphill, Orcutt).

1731 Variety **Tularensis** Pilsbry.
Fraser's Mills, Tulare Co., Cal.

1732 E. Carpenteri (See sub 1505).

1733 E: Indioensis (See sub 1507).

1734 E: Rowellii. Ft. Grant, Arizona.

1735 E. Arizonensis Dall.
Banks of Santa Cruz river, Tucson, Arizona.

1736 E. Magdalenensis
Johnson canyon, near Panamint valley, and near Resting Springs, Cal.—Sonora, Mexico.

1737 E: Hachitana
Huachuca Mts., Arizona.—below San Quentin, Lower California (?).—Grant Co., N. M.

1738 E. Coloradoensis
Arizona.—Inyo and San Diego counties, Cal.

1739 E: arrosa
Coast counties from Humboldt to Santa Cruz, Cal.

1740 Forma Holderiana Cooper.
East side of San Francisco bay, Cal.

1741 Forma Stiversiana Cooper.
Marin Co., Cal. (as also the next).

1742 Forma Marinensis Pilsbry.

1743 Variety **expansilabris** Pilsbry, Nautilus 12:22.
Near Eureka, Humboldt Co., Cal.

1744 E: exarata
Santa Cruz to Marin Co., Cal.

1745 E: contracostæ (See sub 1684).
Synonymy:—E. Arnheimi Dall, etc. See Nautilus 11:54.

1746 E: Californiensis
Monterey, Cal.
1747 Variety Nickliniana
Santa Cruz Co., Cal. (Mendocino Co.?).
1748 Variety Anachoreta
1749 Variety ramentosa
Napa to Santa Clara Co., Cal.
1750 Variety Bridgesi: San Pablo, Cal.
1751 Variety Diabloensis: San Francisco to Yolo Co., Cal.
1752 E: tudiculata: Tulare Co., Cal.
1753 Variety cypreophila
Calaveras, Tuolumne, Merced, Tulare and Los Angeles counties, Cal.
1754 Variety subdolus Hemphill.
San Jacinto valley (now Riverside Co.), Cal.
1755 Variety umbilicata Pilsbry, Nautilus 12:22.
San Luis Obispo Co., Cal.
1756 Variety Tularensis Hemphill.
Fraser's Mills, Tulare Co., Cal.

Subgenus **Micrarionta** Ancey. 1880.

1757 E: Gabbi: San Clemente Island, Cal.
1758 Variety facta: Santa Barbara and San Nicolas Islands, Cal.
1759 E: ruficincta: Catalina Island, Cal.
1760 E: intercisa: San Clemente and Santa Cruz Islands, Cal.
1761 Forma minor Hemphill.
1762 Forma elegans Hemphill.
1763 Forma nepos Hemphill.
1764 Forma albida Hemphill.
1765 Forma callojunctis Pilsbry.
1766 Variety redimita: San Clemente Island, Cal.
1767 Variety castanea Hemphill.
1768 Variety hybrida Hemphill.
1769 Epiphragmophora Kelletti

Under Helix.—"Shell narrowly umbilicated, depressed-globose, thin wrinkled, granulated, fulvous; spire subturbinated, with dirty reddish blotches and one red revolving band; whorls 6, rather convex, the last with a white band at its periphery, and inflated on its under surface; aperture roundly lunate, light red and banded within; peristome somewhat reflected, its columellar portion dilated, reflected, covering the umbilicus. Greater diam. 22, lesser 19; height 19 mill. (Forbes.)"—B-B 176, f 309.

"Helix kellettii" Forbes PZS 1850 55 t 9 f 2, a, b.

"Epiphragmophora (Micrarionta) kelletti Pilsbry Cat land shells of Am north of Mexico 6, 1897.

"The measurements of the type are major diam. 22, minor diam. 19, alt. 19 mm. No locality is mentioned."—Dall Phila ac pr 1900, 103.

V. ? Clementina:—"Shell small, thin, pale translucent brownish in color with obscure revolving series of very minute yellow or whitish flecks; whorls 4, the nucleus wrinkled transversely, reddish, slightly flattened, the succeeding whorls rather convex with a distinct suture; a very narrow dark reddish-brown band, with a hardly visible pale border in front of it, revolves above the periphery; sculpture of rather well-marked incremental rugæ, cut on the upper part of the last whorl by microscopic spiral striation, to which is added a partly obsolete oblique striation which is visible, under magnification, chiefly in patches; the effect of the whole is to give the surface a very fine shagrination; the last whorl near the aperture descends strongly and the plane of the aperture forms an angle of about 45 degrees with the axil

of the shell; base full and rounded, the umbilicus completely covered by a reflection of the pillar lip; aperture rounded, the peristome narrow, whitish, slightly thickened and reflected. Major diam. 15, minor diam. 12, alt. 11 mm.; other specimens are slightly larger. Habitat: San Clemente Island, Cal., U. S. Fish Com."—Dall Phila ac pr 1900, 103-104.

1779-1778 Color forms castanea, nitidia, multilineata, frater, californica, forbesi, bicolor, tricolor, albida, have been named by Hemphill.

1779 E. Tyroni: Santa Barbara and San Nicolas Islands, Cal.
1780-1784 Color varieties varius, nebulosa, fasciata, californica, and albida have been named by Hemphill.
1785 Variety **subcarinata** Hemphill.
Santa Barbara Island, Cal. (fossil).
1786 Vallonia costata montana: Rocky Mts.
1787 Praticolella Berlandieriana
Anderson and Bosque counties, Texas, south into Mexico.
1788 Praticolella griseola
Type locality: Vera Cruz, Mexico.
I have collected thousands in the type locality and as far north as Tampico. The Texan shells I consider distinct.
1789 Polygyra Ashmuni Dall.
Bland, N. M.
1790 Polygyra pseudodonta Dall.
White Oaks, N. M.
1791 Polygyra Mearnsii Dall.
Huachuca Mts., Arizona.—Grant Co., N. M.
1792 Polygyra devia
Vancouver Island, Puget Sound, south.
1793 Variety Hemphilli W. G. Binney.
Synonymy:—Helix binominata Tyron.—H: Mullani Olneyæ (see 1532).
Kingston, Idaho.—Spokane, Wash.
1794 Variety Mullani: Idaho; Wash.
1795 Variety Harfordiana: Salmon river, Idaho.
Synonymy:—H: commutanda Ancey.—H: salmonensis Tryon.
1796 Variety Clappi: Salmon river, Idaho.
1797 Variety Blandi: Idaho.
1798 Variety Oregonensis: eastern Oregon.
1799 Polygyra Sanburni
Kingston and Old Mission, Idaho.
1800 Polygyra Columbiana
Sitka, to Santa Cruz, Cal.
1801 Variety labiosa
Cœur d'Alene Mts., Idaho.—Deer Lodge valley, Montana.
1802 Polygyra armigera
Vernon, B. C.—San Francisco, Cal.
1803 Polygyra loricata
Eldorado to Fresno and Sonoma counties, Cal.
1804 Polygyra Townsendiana
Del Norte Co., Cal.—Seattle, Wash.
1805 Variety ptychophora
Deer Lodge, Mont.—Seattle, Wash.—Dallas, Oregon. Hemphill has named a color form castanea.
1806 Polygyra germana
Astoria, Oregon.—Vancouver Island.
1807 Polygyrella polygyrella
Cœur d'Alene Mts., Idaho.

1808 Variety **montanensis** Ancey
Deer Lodge valley, Montana.
1809 **Polygyrella Harfordiana**
Fresno Co., Cal.
1810 **Polygyrella Yatesii**
Murphy's and Cave City, Calaveras Co., Cal.
1811 **Thysanophora Hornii**
Ft. Grant, Arizona.—N. M.—Mexico.
1812 **Thysanophora Ingersolli**
Colorado at high altitudes.—Fly Park, Arizona.
1813—Variety convexior Ancey.
Logan canyon, Utah.—Weston, Oregon.
1814 **Holospira Mearnsii** Dall.
Top of Hachita Grande Mts., Grant Co., Texas.
1815 **Holospira Cockerelli** Dall, Nautilus 11:61.
Debris of Rio Grande at Mesilla, N. M. (Cockerell).
1816 **Holospira bilamellata** Dall.
Hachita Grande Mt., N. M.
1817 **Holospira Roemeri**
New Braunfels, Texas.
1818 **Holospira Crossei** Dall.
Hachita Grande Mt., N. M.
1819 **Holospira pilsbryi** Dall.
New Mexico or Arizona.—Puebla, Mexico.
1820 **Leucocheila fallax**
Canada to Florida. Minn. Texas. Arizona.

Genus **Bifidaria** Sterki. 1891.

1821 **Bifidaria armifera:** eastern U. S.
1822 **Bifidaria hordeacea:** Ariz.—N. M.
1823 **Bifidaria procera**
Minn. to N. M.
1824 **Bifidaria hordeacella**
Comal and Lee counties, Texas.—N. M.
1825 **Bifidaria hebes** (See 1593).
Type locality: White Pine, Nevada. Occurs also in Utah, Arizona and N. M.
Synonymy:—Pupa arizonensis W. G. B. (non Gabb).—P. Gabbi Dall.
1826 Forma **saxicola** Ckll. Near Silver Cliff, Colo.
1827 Variety **Mexicanorum** Ckll. Mesilla, N. M.
1828 **Bifidaria Pilsbryana** Sterki.
New Mexico.—Arizona.
1829 **Pupa Rowelli**
Oakland to Monterey, Cal.
1830 **Pupa castanea** Sterki.
Lake Co., Cal.
1831 **Pupa decora borealis:** Bering Island.
1832 **Pupa concinnula** Ckll.
Colorado at high elevations.
Synonymy:—Vertigo Ingersolli Ancey and vars. accedens and haydeni.—Perhaps P. montanella Ckll. ined.
1833 **Pupa coloradoensis** Ckl..
Colorado, mid-alpine.
1834 **Pupa Hoppii** Maell.
Greenland.—?Anticosti Island.—Laggan, near summit of Rocky Mts.
1835 **Pupa columbiana** Sterki.
Wash.; and var. Utahensis Sterki, ined.
1836 **Pupa calamitosa**
San Diego, Cal.—Baja Cal.

1837 Vertigo Dalliana (See 1493).
1838 Vertigo Binneyana Sterki.
Manitoba.—Seattle, Wash.—N. M.
1839 Vertigo Gouldii Binn.
Maine to Montana.—N. S.—Md.—Quebec, Ont.
1840 Cochlicopa lubrica
Canada to Alabama. Oregon. Alaska.
Synonymy:—Ferussacia subcylindrica, etc.
1841 Cincinaria Hemphilli
Olympia, Wallawalla and Freeport, Wash.—Oregon.—Mission Park, near San Francisco bay, Cal., and in Placer Co., Cal. (Button, Nautilus 14:72).
1842 Circinaria Vancouverensis
Sitka to Bolinas bay, Cal.
1843 Variety **occidentalis** Hemphill.
Sonoma to Santa Cruz Co., Cal.—Kalama, Wash.
Synonymy:—Selenites concavus tenuis Hemph. (Napa Co., Cal.).
1844 Variety **Keepi** Hemph. Oakland, Cal.
1845 Circinaria sportella
Klamath and Humboldt Co., Cal., to Vancouver Island.
1846 Variety **hybrida**: Ore.—Wash. B. C.
Synonymy:—Macrocyclis Van. var. hybrida Anc.—Selenites Van. var. hybrida Hemphill.
1847 Circinaria voyana
Shasta Co., Cal., to Puget Sound.
1848 Variety **simplicilabris** Ancey. Cal.
1849 Circinaria Duranti: Santa Barbara Island.
1850 Variety **cælata** Mazyck.
San Diego, Cal.—Santo Tomas river, Lower Cal.
Synonymy:—cælatura W. G. B.
1851 Variety **catalinensis** Hemphill. Catalina Island.
1852 Circinaria transfuga
San Diego, Cal.—Todos Santos bay, Baja Cal.
1853 Vitrina exilis: Unalaska.
1854 Vitrea cellaria
Europe; seaports of Atlantic and Pacific coasts, etc.
1855 Vitrea Draparnaldi
Seattle, Wash.—Oakland, Cal., in greenhouses.
1856 Vitrea Hammonis: N. C.—Colo. Palæarctic.
Synonymy:—Hyalina pellucida Lehnert; H: viridula Mke.; H: radiatula Ald.; H: electrina Gould.
1857 Vitrea Binneyana
Quebec.—Me.—Mich.—Vancouver Island.
1858 Vitrea Whitneyi
Near Lake Tahoe, Cal.
1859 Vitrea Diegoensis Hemphill.
Cuyamaca Mt., San Diego Co., Cal.
1860 Vitrea indentata
Dakota.—N. M.—Baja Cal.—Fla.—Jalisco and Morelos, Mex.
1861 Vitrea subrupicola
Clinton's Cave, Utah.
1862 Vitrea subrupicola spelæa
Cave City, Calaveras Co., Cal.
1863 Conulus chersinellus Dall.
Calaveras and Fresno counties, Cal.
1864 Zonitoides arboreus
British America; all U. S.
1865 Zonitoides limatulus
N. Y.—O.—San Mateo, Cal.

1866 Zonitoides selenitoides
See Zonites selenitoides.
1867 Zonitoides minusculus
Ontario to Fla.—Mont.—Arizona.—N. M.
1868 Zonitoides læviusculus
Ind.—O.—Texas.—N. M.
1869 Zonitoides milium pugetensis
Seattle, Wash.—Ballena, San Diego Co., Cal.
1870 Agriolimax campestris
Entire U. S.
1871-1874 Varieties occidentalis Cooper.—montanus and castaneus Ing.—Ingersolli W. G. B. and various color forms have been described.
1875 Agriolimax agrestis
Seaports of Atlantic and Pacific coasts. Many named color-forms.
1876 Agriolimax Hemphilli
Julian, San Diego Co., Cal.—Santo Tomas, Baja Cal.
1877 Variety pictus Cockerell.
1878 Amalia Hewstoni
Seattle, Wash., to San Diego Co., Cal. May be identical with A. gagates of Europe.
1879 Arion hortensis
Europe: introduced in Seattle, Wash., Boston, Mass., etc.
1880 Prophysaon fasciatum
Old Mission, Idaho. Chehalis and Seattle, Wash. See Ckll, Nautilus 11:79.
1881 Prophysaon foliatum
Seattle and Olympia, Wash. See Ckll, Nautilus 11:78.
Synonymy:—Arion foliatus Gld.
1882 Hesperarion niger Cooper.
San Francisco bay, Cal.
1883 Hesparion Hemphilli
Niles, Alameda Co., Cal.
1884 Aphallarion Buttoni Pils. & Van.
Oakland to Santa Cruz, Cal.
Synonymy:—"Ariolimax hecoxi Weth. ined. is said to be the same" (if so, this name published in 1879 has priority). (See 654.)
1885 Hemphillia camelus Pils. & Van.
Old Mission, Idaho.
1886 Pyramidula solitaria
O. Ark. Idaho. Oregon.
1887 Variety occidentalis v. Martens.
1888 Variety limitaris Dawson.
Waterton lake, Rocky Mts., British America.
1889 Pyramidula strigosa
Wash. Wyoming. Sonora, Mexico.
1890-1916 Varieties or forms Binneyi, cooperi, multicostata, castanea, albofasciata, buttoni, gouldii, parma, jugalis, intersum, subcarinata, bicolor, lactea, picta, globulosa, trifasciata, confluens, elevata, major, minor, lowensis (extinct), concentrata, Haydeni, Hemphilli, Gabbiana, Bruneri (oquirrhensis) and hybrida, have been described by Cockerell, Hemphill and others. See 1479 to 1485.
1917 Pyramidula perspectiva
Minn. to Texas.
1918 Pyramidula striatella
Ontario to Vancouver Island. Kern river, Cal. New Mexico, Arizona.

1919 Variety Cronkhitei
Klamath valley, Oregon. Cal. Nevada.
1920 Pyramidula asteriscus
Maine to Vancouver Island.
1921 Helicodiscus lineatus (See Helix).
White Oaks, N. M.—Florida.—Canada.
1922 Punctum pygmæum
Quebec. Texas. Cal. Vancouver Island.

1923 Punctum Clappi
"Shell minute, openly umbilicated, yellowish-brown, with depressed, nearly level spire, and cylindroid whorls. Whorls 3.5, the earlier 1.5 smoothish, finely pitted, the last 1 or 1.25 whorls sculptured with elevated laminæ running with the incrementlines, 30 to over 40 on the last whorl, the intervals closely striated and showing fine spiral striation; suture impressed, descending in front; umbilicus deep and open, its width contained between 3 1-3d and 3 1-half times in greatest diameter of shell. Aperture short oval, higher than wide, somewhat oblique, but little excised by the previous whorl. Alt. 1.1-1.2 mm."—Pilsbry, Nautilus 11:133.
Type localities:—Seattle (Randolph) and Tacoma, Wash. (Hemphill); Salem, Oregon (Hemphill).

1924 Punctum californicum
"Similar to P. conspectum in the small, deep umbilicus and color. Spire somewhat more elevated; whorls fully 4, closely revolving, the last decidedly narrower than in conspectum (viewed from above). Surface lusterless, with fine, even, hair-like striation, and in places showing faint traces of spiral striæ. Umbilicus narrow and deep, its width contained 4 1-3 times in greatest diameter of shell. Aperture wider than high, shaped much as in P. conspectum. Alt. 1.14, greatest diam. 1.85 mm. Fish Camp, Fresno county, California."—Pilsbry, Nautilus, 11:134 (Ap 1898).

1924 Succinea Haydeni W. G. Binn.
Nebraska to Utah. Var. minor W. G. B. from Great Slave Lake.
1925 Succinea Grosvenorii Lea.
La. Miss. Texas. Kans. Nebr. Colo. Utah. Mont.
1926 Forma elongata: Kremmling, Colo.
1927 Forma rufescens Ckll. Lee Co., Texas.
1928 Succinea avara Say.
Canada to Georgia; Mont., Utah, Texas, Cal.
1929-1933 Forms alba Ckll. (Custer Co., Colo.); wardiana Lea; vermeta Say; compacta Ckll.; major Binn. have been described.
1934 Succinea oregonensis Gabbi.
Utah; Wyoming; eastern Oregon.
1935 Succinea chysis Westerl.
Port Clarence, St. Michaels and Kadiak, Alaska. Siberia.
1936 Variety aurelia Martens.
Port Clarence, Alaska.
1937 Succinea annexa Westerl.
Port Clarence, Alaska. Nos. 1935-1937 are probably variations of one species.
1938 Vaginulus olivacea
Lobitos, Cal. (Stearns)?
1939 Helix devia Clappi.

Hemphill, Nautilus 11:74. Salmon river Mts., Idaho.

1940 Prophysaon humile

Cockerell, Nautilus 11:79. Notes on a Cœur d'Alene example.

1941 Sigaretus Oldroydi Dall.

Shell large, thin, naticoid, with a short spire and 3-4 inflated whorls; color pale brown, livid on the spire, fading to waxen on the base; surface sculptured with extremely fine wavy spiral striæ; aperture ample, oblique, outer lip thin, a little patulous, the body covered with a thin callus, pillar lip obliquely cut away, wide near the junction with the body, basal part of margin receding; umbilicus large, pervious, its walls covered with a thin, silky, brown wrinkled epidermis. Alt. 35, diam. 37 mm."—Dall, Nautilus 11:85-12:85.

Type locality:—off Catalina Island, Cal., in deep water (Mr. and Mrs. T. S. Oldroyd).

1942 Pecten Palmeri Dall, Nautilus 11:85. Gulf of Cal. (Edward Palmer).

1943 Pecten Davidsoni

On the Davidson bank, Alaska, in 280 fms., green mud, and north of Unalashka, in Bering Sea, 351 fms., sand.

"Shell small, suborbicular, compressed, waxen white, left valve with 21 rounded ribs, surmounted by (when not worn off) continuous rows of minute subglobular scales, the interspaces wide, flat and perfectly smooth, ears very small, the interior with 5 or 6 imbricated radii; sculpture obsolete near the umbones; right valve sculptured with faint concentric impressed lines over the whole surface, and distally with numerous minute, obsolete, fine, scaly riblets; posterior ear transversely striated, very small, anterior one with 4 or 5 scaly radii, a well marked sinus leaving an imbricated fasciole and no stenolium. Interior polished, the left valve fluted internally in harmony with the external ribs. Alt. 14, lat. 14, diam. 3.5 mm."—Dall, Nautilus 11:86.

1944 Pecten Randolphi

"Shell small, thin, glossy, unsculptured, except by minute 'camptonectes' striation which covers both valves, and more or less obscure concentric undulations which are most distant on the right valve near the umbo, and in some specimens altogether absent; hinge straight and short, anterior ears distinct, posterior ears not defined by any fold or sinus, outline suborbicular, valves compressed, especially the right one; right anterior ear with 6 small imbricated radii above, below a wide, transversely striated fasciole derived from a well marked byssal sinus; cternolium with 4 or 5 functional spines. Alt. 27.5, lat. 26, diam. 5 mm."—Dall, Nautilus 11:86.

Type locality:—off Destruction Island, Wash., in 5-6 fms. Occurs from Bering Sea to West Mexico, in 225-1005 fms. Named in honor of P. B. Randolph, of Seattle, Wash.

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1945 Pilsbry, H. A. and E. G. Vannatta:

Revision of the North American Slugs: Binneya, Hemphillia, Hesperarion, Prophysaon and Anadenulus. Phila ac pr 1898: 219-261, t 9-16. Not seen.

1946 Bifidaria Ashmuni

Sterki, Nautilus 12:49. Arizona and N. M.

1947 Lanx patelloidea Lea.
Redding, Shasta Co., Cal (R. C. McGregor). Originally published as an Ancylus, the only known species with variegated, opaque coloring.—Nautilus 12:60.
1948 Ancylus oregonensis Clessin.
Redding, Shasta Co., Cal. (R. C. McGregor).
1949 Mytilus Stearnsi
Pilsbry and Raymond, Nautilus 12:70, suggest this name for the shell known previously in California as Mytilus bifurcatus.
Type locality:—San Diego, Cal.
1950 Polygyra miorhyssa
Dall, Nautilus 12:75. Sierra Blanca, N. M.
1951 Polygyra altissima (See No. 2919).
1952 Polygyra rhyssa hyporhyssa
Cockerell, Nautilus 12:77. Sierra Blanca, N. M.
1953 Pisidium Roperi
Sterki, Nautilus 12:77. —R. I.—Ind.—Ill.—Minn. (probably Utah, Cal., and Wash.).
1954 Haliotis Cracherodii Californiensis
Pilsbry, Nautilus 12:79.
1955 Pyramidula Cockerelli
Pilsbry, Nautilus 12:85. N. M. Colo.
1956 Zonitoides Randolphi
Pilsbry, Nautilus 12:87. Lake Linderman, Alaska.
1957 Bifidaria perversa
Sterki, Nautilus 12:90. Nogales, Arizona (Ashmun).
1959 Forma minor Sterki. Nogales, Arizona.

1960 Haliotis fulgens wallallensis
"Shell of an oval form, considerably flattened and with about 2½ whorls; color dark brick red, with occasional mottlings of pale bluish green; holes, 4 in the young to 6 in the adult; sculpture, of fine, somewhat irregular spiral threads, crossed by fine, slightly elevated, sharp, concentric lamellæ, and a few small obscure wavelets which radiate obliquely from the apex; nacre rather pale, with pink and pale green reflections, but much less deep in color than in the typical fulgens. Lon. 100, lat. 68, alt. 17 mm."—Dall (Stearns, Nautilus 12:107).
Type locality:—Mendocino Co., Cal.
Stearns, U. S. nat mus pr 22:139.

1961 Genus **Ashmunella** Pilsbry.
Nautilus 12:107. Type Polygyra miorhyssa Dall. Pilsbry, l. c. 1899:188.

1962 Ashmunella miorhyssa (See 1950).

1963 Randolph, P. B.
Collecting shells in the Klondike country. Nautilus 12:109-112.

1964 Pilsbry, Henry A.:
Remarks on the American species of Conulus. Nautilus 12: 113. Describes the following form.
1965 Conulus fulvus alaskensis
Dyea valley and Point Romanoff, Alaska (P. B. Randolph).

1966 Amnicola concinnatiensis
Utah: Sevier Lake valley, Salt Lake Point.

1967 Pyrgulopsis Nevadensis Stearns.
Pyramid Lake, Nevada.

1968 Genus **Paludestrina** Ofb.
Includes Bythinella Mog. Tand and of authors generally.

1969 Paludestrina longinqua
See No. 215, 216 and 628 for description, localities, etc.
Synonymy: Bythinella intermedia Tryon.

1970 Paludestrina imitator Pilsbry.
Sonoma, Alameda and Santa Cruz counties, Cal.

1971 Paludestrina Stearnsiana
Marin, Alameda, Tuolumne, Santa Clara and Santa Cruz counties, Cal.

1973 Paludestrina Hemphilli
Near Kentucky Ferry, Snake river, Wash. (Hemphill).

1974 Paludestrina protea
Colorado Desert, and Death Valley, Cal. Durango and Michoacan, Mexico.

1975 Tryonia clathrata Stimpson
Colorado Desert, Pahranagat valley, Nevada (Merriam).

1976 Fluminicola Columbiana Hemphill.
Columbia river near Wallula, Wash.—Idaho.

1977 Fluminicola seminalis Hinds.
Sacramento river, Cal. (Hinds)—Klamath river, Oregon (Gabb).

1978 Variety **Dalli** Call.
Brook flowing into north end of Pyramid Lake, Nevada (Call).
Synonyms:—Amnicola Dalli Call.—A: turbiniformis Tryon.—Lithoglyphus Cumingii Fffd. (fide Pilsbry).

1979—Fluminicola erythropoma Pilsbry.
Nye Co., Nevada.
Synonymy:—F: fusca var. minor Stearns.

1980 Pomatiopsis Binneyi Tryon.
Bolinas, Cal.

1981 Pomatiopsis Californica Pils.
San Francisco and Oakland, Cal.
See descriptions of above species in Nautilus 12:124-127.

1982 Drillia Emprosia
"Shell solid, with a high acute spire and polished surface; color yellowish with a burnt sienna brown tint on the later whorls, a paler peripheral band develops white patches where it crosses the ribs; transverse sculpture of (about 11) slightly oblique somewhat flexuous ribs, obsolete below the periphery and upon the anal fasciole, sharpest on the earlier whorls; spiral sculpture of coarse, sometimes nearly obsolete threads, most obvious below the periphery; whorls 9, the nucleus lost in the specimen; aperture short, wide, with a deep wide notch leaving a wide fasciole, a callous lump above the notch on the body, and a rather strong whitish callus, externally brown-edged, on the pillar; siphonal notch wide with a marked fasciole, the canal slightly recurved. Lon. of shell 31, of last whorl 16; of aperture 10, max. diam. 10 mm."—Dall, Nautilus 12:127.
Type locality:—Off San Pedro, Cal. (Mr. and Mrs. T. S. Oldroyd).

1983 Bifidaria quadridentata Sterki.
Nautilus 12:127. Capitan Mts., N. M. (Ashmun).

1984 Bif. hordeacella parvidens
Sterki, l. c.:—Jerome, Arizona (Ashmun).

1985 Pupa (Pupilla) sonorana
Sterki, l. c.:—New Mexico (Ashmun).
1986 Variety **Tenella** Sterki, l. c. 129. N. M. (Ashmun).
1987 Ashmunella pseudodonta capitanensis
Ashmun and Cockerell, Nautilus 12:131. N. M.
1989 Pteronotus carpenteri
Type locality:—Monterey, Cal. (F. L. Button), etc.
Dall, Nautilus 12:138.
1990 Crepidula convexa Say.
Variety glauca Say.
San Francisco bay, Cal. (Hemphill). See Nautilus 13:8.
1991 Ashmun, E. H.
Collecting in Arizona and New Mexico. Nautilus 13:13-17.
1992 Randolph, P. B.
Epiphragmorphora fidelis Gray. Nautilus 13:25.

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1993 Lowe, H. N.
Dredging off San Pedro, Cal. Nautilus 13:27. Gives an interesting list.

1994 Planorbis opercularis multilineatus
Vanatta, Nautilus 13:48 substitutes for var. oregonensis (see No. 1683).
1995 Ashmunella Thompsoniana
1996 Variety **Porteræ** Pilsbry and Cockerell.
Type locality:—Beulah, N. M. (Miss Wilmotte Porter).
Nautilus 14:49.

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1997 Pilsbry, Henry A.
Mollusks collected by R. C. McGregor in northern California. Nautilus 13:64-67.
An important list, not checked up in the present catalog.

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1998 Stearns, Robert Edwards Carter:
Abalone fishery in California—protective regulation. Nautilus 13:81.

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1999 Pilsbry, H. A.
Note on some New Mexican shells. Nautilus 13:79.
Mentions, among others, Nos. 2000-2002, collected near Roswell, N. M.
See also Nautilus 14:9.

2000 Polygyra Texasiana
2001 Bifidaria pentodon
2002 Paludestrina Seemanni
2003 Modiola plicatula Lam.
Stearns, Nautilus 13:86. San Francisco bay, Cal.

2004 Capulus Californicus
"Shell only moderately elevated, oval or more or less conformable with the object upon which it rests, the apex small, somewhat laterally compressed, incurved almost symmetrically, nearly concealing the smooth, 1-whorled nucleus, situated near the posterior margin; surface nearly smooth, somewhat irregular, mesially with small faint radial not very close-set ridges, covered with an imbricated dense soft glistening periostracum which projects beyond the margins; interior polished, white, with faint rosy rays extending from the apex to the anterior margin; alt. 10, lon. before the apex 30, behind it 5.5, total basal length 36.5, average width

29 mm."—Dall, Nautilus 13:100.
Type locality:—off San Pedro, Cal., in 20-25 fms., on a valve of Pecten diegensis (Mrs. T. S. Oldroyd).

2005 Kelsey, F. W.
Dredging in San Diego bay. Nautilus 13:101.

2006 Zonitoides neomexicanus
Cockerell & Pilsbry, Nautilus 13:114. Organ Mts., N. M.
2007 Ensis californicus Dall.
Off San Pedro Martin Island, Gulf of Cal., in 14 fms. Monterey, Cal.
2008 Siliqua patula alta
Bering Sea.
Synonymy:—Cultellus costatus Sby. (non Say).
2009 Siliqua media Gray.
Okhotsk and Bering Sea, north to Arctic ocean.
Synonymy:—Machæra costata Midd.—Siliqua borealis Conr.
2010 Siliqua Nuttallii Conrad.
Lituya bay, Alaska, south to Monterey, Cal.
2011 Petricola cognata C. B. Adams.
Synonymy:—P. gracilis Desh.
2012 Perticola denticulata Sby.
San Pedro, Cal. to Peru.
Dall, Nautilus 13:121 gives an extended note on the synonymy, including P. ventricosa Desh.—P. nivea and tenuis Sby. (in part).—Psephis tellimyalis Cpr.

2013 Epiphragmophora Bowersi
Shell umbilicated, convex; epidermis olivaceous; spire slightly elevated; whorls between 4 and 5, convex, gradually increasing; suture well defined; aperture transverse, nearly circular; peristome whitish, thin, very slightly expanded at the basal portion, at the columella broadly reflected, yet leaving the umbilicus entirely open, showing within the whorls to the apex; base convex. A well defined, moderately broad, light-chestnut band revolves above the center of the body whorl, and is visible above the suture on the whorl preceding the last; lines of growth close and distinctly marked. Greater diameter 13, lesser 10, height 6mm. San Jacinto mountains, Riverside county, California."—F. W. Bryant, Nautilus, 13:143 (Mr 1900).
Named in honor of Dr. Stephen A. Bowers, a pioneer in scientific and other good work on the Pacific coast.

2014 Epiphragmophora Harperi Bryant
"Shell umbilicate, translucent, white; suture well defined; spire a depressed cone composed of 5 regularly increasing convex whorls, the first 3 smooth, the remainder marked by obscure, closely crowded, oblique lines of growth; base convex; aperture nearly circular, oblique; peristome thin, broadly expanded, and reflexed at lower third of baso-columellar portion, its extremities joined by an elevated ridge, bordering which is a somewhat triangular callus bounded on the inner side by a ridge extending from the middle of the base of the reflected portion of the peri stome obliquely to the upper part of the basal whorl; width of umbilicus about one-fifth greater diameter of shell. Numerous dark microscopical lines extend from the peristome over the body whorl nearly perpendicular to the lines of growth. Greatest diam. 17, least diam. 14, alt. 9 mm. San Jacinto mountains, California."—F. W. Bryant, Nautilus, 13:143 (Ap 1900).

It should be noted that Epiphrogmaphora Harperi was named in honor of Prof. George W. Harper, for nearly half a century devoted to educational work in Cincinnati, and until lately principal of Woodward High School—having resigned that position to devote his time more fully to scientific research; geology and conchology are his specialties.

2015 Stearns, R. E. C.
Notes on the distribution of and certain characters in the Saxidomi of the West Coast. Nautilus 14:1.

2016—Williamson, Mrs. M. Burton:
Æstivation of Epiphragmophora Traskii in Southern California. Nautilus 14:13.

2017 Lima Hamlini
Dall, Nautilus 14:15. Los Angeles, Cal. Fossil.
2018 Pyramidula elrodi
Pilsbry, Nautilus 14:40. Mission Mts., Montana (M. J. Elrod).
2019 Helicodiscus eighenmanni
Pilsbry, Nautilus 14:41. Beaver cave, near San Marcos, Texas (C. H Eigenmann).
2020—Stearns, R. E. C.
Vallonia pulchella in Los Angeles, Cal., and elsewhere. Nautilus 14:65.
2021 Ariolimax steindachneri
Puget Sound. See Nautilus 14:71.
2022 Ashmunella hyporhysa
Cockerell, Nautilus 14:72, describes edentata, rufescens and alba as color-mutations, from Cloudcroft, Sacramento Mts., N. M.
2023 Phyllaphysia Taylori
Dall, Nautilus 14:91. Near Nanaimo, B. C. (Geo. W. Taylor).

2024 Pilsbry, H. A. and T. D. A. Cockerell:
Records of mollusca from New Mexico. Nautilus 14:85.
Not checked up in the present list.

2025 Hemphill, Henry:
A contribution to West Coast Conchology. Nautilus 14:109-113, 121-125, 136-140.

2026 Pecten (Lyropecten) Dilleri
Dall, Nautilus 14:117. Eel river, Cal. (J. S. Diller), fossil.
2027 Atrina Oldroydi
Dall, Nautilus 14:142. San Pedro, Cal., in 25 fms. (Mr. and Mrs. T. S. Oldroyd).

2028 Gifford, Edward W.
Epiphragmophora fidelis in central California. Nautilus 14:114. At Point San Mateo, San Mateo Co., the occurrence of this species is noted.
2029 Ashmunella Thompsoniana Cooperæ
Cockerell, Nautilus 15:35. Las Vegas Hot Springs, N. M. (Miss Mary Cooper).
2030 Truncatella Stimpsoni Guadalupensis
Stouter than the type, whorls less convex, color pale red, length 6, diam. 2.5 mm.—Pilsbry, Nautilus 15:83. Guadalupe Island, Baja Cal. (R. E. Snodgrass).
2031 Liomesus nassula
Dall, Nautilus 15:89. Pribiloff Island, Bering Sea.

2032 Tethys (Neaplysia) Ritteri
Cockerell, Nautilus 15:90. San Pedro, Cal.

2033 Vivipara malleata Reeve
Japan. R. E. C. Stearns, Nautilus 15:90, on "Japanese Vivipara in California," which see. V. stelmaphora Bgt. is a synonym.

2034 Volutomitra alaskana
Dall, Nautilus 15:103. Bering Sea, 60 fms., to San Diego, Cal., in 822 fms.

2035 Elrod, Morten J.
Collecting shells in Montana. Nautilus 15:86-89, 103-104, 110-112, 129-130.

2036 Cockerell, T. D. A., and Mary Cooper:
Notes on Ashmunella. Nautilus 15:109-110.

2037 Rissoina Bakeri
Bartch, Nautilus 16:9. San Pedro, Cal., Pacific Beach, Cal., San Martin Island, Baja Cal. Named in honor of Dr. Fred Baker, of San Diego, Cal.

2038 Chromodoris universitatis
"Length about 67 mm, rather narrow, mantle less ample than in C: mcfarlandi, not expanded at the sides; rhinophores and branchiæ wholly retractile; rhinophores stout, with numerous transverse lamellæ; branchiæ of about 12 large simply pinnate plumes, several more or less branched, and so bipinnate at the ends; oral tentacles just concealed by mantle; hind end of mantle gibbous; foot projecting 20 mm behind end of mantle; breadth of sole when crawling 8.5 mm. Color rich dark ultramarine blue, edge of mantle and edge of foot bright cobalt blue; rhinophores very dark blue; mantle with 2 longitudinal series of oblong very bright orange spots, about 7 in a series; 5 round orange spots on the anterior part of mantle, in front of rhinophores; under surface of posterior lobe of mantle with a series of 8 round white spots, the hindmost 4 large, the others smaller and rather faint; sides of foot with a series of over 10 round or oval orange spots; branchiæ very dark blue, speckled with orange within; sole deep blue."—Cockerell, Nautilus 16:19.
San Pedro, Cal., in rocky pools between tides. La Jolla, Cal.

2039 Chromodoris Porteræ
"Length about 11 mm, form of C: universitatis, but uniformly much smaller, and quite different in markings. Deep ultramarine blue, including tne whole of the foot; mantle with 2 rather broad longitudinal stripes of bright orange, not united posteriorly, and ending anteriorly at the rhinophores, but anterior to the rhinophores is a transverse orange stripe; median stripe of C: mcfarlandi represented by an inconspicuous lighter blue line; margins of mantle very narrowly pure white; foot wholly without marks, except that the hind end has a suffused whitish stripe. Rhinophores and branchiæ entirely retractile. Branchial plumes 11, in a circle, simply pinnate, entirely of the blue color of the mantle. After death, a number of conical white papillæ (about 9 on each side) appear beneath the hind part of the mantle. After deatn the blue dissolves out, and the body becomes a sort of pale greenish-blue, with the dorsal stripe very white; and the orange bands as in life."—Cockerell, Nautilus 16:20.
Type locality:—In rocky pools at low tide, La Jolla, Cal. (Wilmatte Porter Cockerell.

2040 Chromodoris McFarlandi
"Length about 35 mm; mantle ample, covering head, but

pointed end of foot projecting far beyond mantle posteriorly; rhinophores short and stout, lamellate, with over 20 transverse lamellæ; branchiæ entirely retractile, arranged in the shape of a horseshoe, not entirely surrounding the anus, which is produced into a truncate cone; branchial plumes 12, simply pinnate, some of the posterior plumes bifid; oral tentacles short, wholly concealed under the mantle; eyes apparently absent. Mantle brilliant purple, with a yellow margin (continues in front and behind), and 3 longitudinal yellow stripes; the yellow of the margin is really bright orange, bordered with white; the median yellow stripe begins a short distance before the rhinophores, and runs between them; rhinophores dark purple; foot white with a purple tint, or quite purple when contracted after death; the end of foot is purple with a dorsal longitudinal orange stripe. The purple color does not dissolve out in formalin."—Cockerell, Nautilus 16:20.

In rocky pools at low tide, La Jolla, Cal.—San Pedro, Cal. Named in honor of Prof. F. M. McFarland, of Stanford University.

2041 Baker, Fred.

Cruising and collecting off the coast of Lower California. Nautilus 16:25-29.

List of shells of San Martin Island, Lower California. Nautilus 16:40-43.

2042 Sonorella granulatissima

Pilsbry, Nautilus 16:32. Huachuca Mts., Arizona.

2043 Glyptostoma Newberryanum depressum

F. W. Bryant, Nautilus 16:70. Bluffs north of Ensenada, Lower California. Also near Wilmington, Los Angeles Co., Cal. (Hemphill).

Much depressed, the alt. of shells with an equal number of whorls being less than 2-3ds that of Binney's species. The diam. is correspondingly reduced. The aperture is less round. A specimen measures alt. 11, diam. 27 mm.

2044 Rissoa Kelseyi

"Shell of medium size, elongate-conic, white, variously banded, or uniformly chocolate brown. Nuclear whorls mammillate, smooth. Post-nuclear whorls slightly rounded, ornamented axially by a few broad, depressed, almost obsolete ribs which are best seen near the summit of the whorls, and many irregular, more or less deeply impressed striations, which extended almost undiminished to the umbilical region. The spiral sculpture however is more conspicuous than the axial, and consists of deeply impressed lines which are more closely placed and less strongly developed near the summit of the whorls than at the periphery, grading gradually in this respect between these two regions. Sutures simple, well marked. Periphery and base of the last whorl well rounded, the latter ornamented by spiral sculpture similar to that between the sutures, but a little more distantly spaced and more strongly impressed. Eighteen of the spiral lines appear between the sutures upon the penult whorl and 10 upon the base. Aperture large, oblique, decidedly effuse anteriorly; posterior angle acute, peristome continuous; columella strong, short, somewhat twisted and slightly revolute. The type has 7 post-nuclear whorls and measures: long. 6.3, diam. 2.5 mm."—Dall and Bartsch, Nautilus 16:94.

Type locality:—Pacific Beach, San Diego, Cal. (F. W. Kelsey).

2045 Ashmunella Thompsoniana Pecosensis
Cockerell, Nautilus 16:105. Valle ranch, Pecos, N. M. (fossil).
2046 Pyramidula strigosa concentrata
Cockerell, Nautilus 16:106. Alpine, Chaffee Co., Colo.
2047 Tritonia Palmeri Cooper
Cockerell, Nautilus 16:117. Note. San Pedro, Cal.
Type locality:—San Diego, Cal.

2048 Stearns, Robert E. C.
Mollusks occurring in Southern California. Nautilus 16:133.

2049 Elrod, Morton J.
Montana shells—Pyramidula strigosa. Nautilus 17:1-6.
Describes var. alpina as new, and other forms.

2050 Cooper, James G.
A list of the writings on conchology and palæontology of the author, compiled by W. J. Ramond, appears in the Nautilus 17: 6-12.

2051 Olivella (anazora Ducl. var.?) Porteri
"Shell of about the form and size of the east American O: jaspidea, with very variable coloration; whorls about 7, spire acute with a very deep and narrow channeled suture not obscured by callus; surface of whorls brilliantly polished, smooth, except for microscopic spiral close striation which is present on all, but more uniform on particular individuals; color pale olive, yellow, or whitish, with sharp angular axial brown lines superposed between the suture and the basal fasciole, sometimes forming a tent-like pattern and sometimes reduced to fine, close, more or less cloudy zigzags; a pale band in front of the suture, usually with vivid brown zigzag pointed forward, but sometimes plain, the brown lines when present broader and stronger than elsewhere; basal fasciole short, with a marginal and an adjacent narrow fold or plait anteriorly, lighter than the body, yellow or rich bluish purple; aperture narrow, simple, with a deep sutural sinus and a moderate parietal callus when mature. Height of shell 15, of aperture 9, max. diam. 6 mm."—Dall, Nautilus 23:133.
San Diego, Cal., on sandbars near entrance to harbor (Miss J. M. Cooke). Scammon Lagoon, Lower California. Named in honor of Capt. George Porter, who collected largely in the Gulf of California, and is supposed to have lost his life at Tiburon Island.

2052 Pomaulax turbanicus Dall, Nautilus 23:134.
Magdalena bay, Lower Cal., in 36 fms.
2053 Pachypoma magdalena
Dall, l. c. 135, same locality.
2054 Pachypoma lithophorum
Dall, l. c. Cerros Island, Baja Cal., in 58 fms.
2055 Leptogyra alaskana
Bartsch, Nautilus 23:136, t 11 f 46. Port Graham, Alaska (Fred Baker).
2056 Alvania Bakeri
Bartch, l. c. 137 t 11 f 8. Port Graham, Alaska (Fred Baker).
2057 Onoba asser
Bartsch, l. c. 138, t 11 f 9. Same locality and collector.
2058 Odostomia (Evelea) Cookeana
Bartsch, l. c. Ellamar, Alaska (Fred Baker).
Named in honor of Miss J. M. Cooke, of San Diego, Cal.
2059 Lymnæa bulimoides techella Hald.

Junius Henderson, Nautilus 23:144. San Bernardino Co., Cal.

2060 Baker, Fred.
Shell collecting in Puget Sound and Alaska. Nautilus 24: 25-31, 44-47. With list of shells collected. Includes Nos 2061-2079.

2061 Purpura foliata Mart.
Synonymy:—Cerostoma foliatum Mart.
Orcas Island, Puget Sound.
2062 Tritonalia lurida
Synonymy: Ocinebra lurida Midd.
2063 Tritonalia subangulata
Synonymy:—Ocinebra subangulata Stearns.
2064-2069 Thais (nucella) decemcostata Midd.—lamellosa Gmel.—lima Mart.—saxicola Val. and its varieties emarginate Desch. and ostrina Gld. (see under Purpura, same species).
2070 Argobuccinum oregonense
Synonymy: Priene oregonense Redf.—Triton oreg.
2071 Buccinum cyaneum Brug.
Ellamar, Alaska (Baker).
2072 Alectrion (Tritia) mendica
Synonymy:—Nassa mendica Gld.
2073 Columbella (Nitidella) Gouldi Cpr.
2074 Polinices Lewisii
Synonymy:—Lunatia Lewisii Gld.
2075 Polinices pallidus Brod. & Sby.
Orcas Island.—Ellamar, Alaska.
2076 Crepidula grandis Midd.
Port Graham, Alaska.
2077 Cæcum Hemphilli Stearns.
Ellamar, Alaska (Fred Baker).
2078 Tachyrynchus lacteola
Synonymy:—Mesalia lacteola Cpr. Orcas Island.
2079 Turbonilla (Pyrgolampros) **Alaskana**
Orcas Island, Puget Sound.
2080 Hindsia perideris
Dall, Nautilus 24:32. Gulf of Cal.
2081 Cymatium adairense
Dall, Nautilus 24:33. Off La Paz, Baja Cal., in 10 fms.
2082 Solariella triphostephanus
Dall, Nautilus 24:34. Gulf of Cal.
2085 Eucalodium (Anisospira) **Orcutti**
Dall, Nautilus 24:34.
Type locality:—hot springs, Rio Verde, Oax., Mexico (Orcutt).
2086 Epiphragmophora verdensis
Dall, Nautilus 24:35.
Type locality:—hot springs, Rio Verde, Oax., Mexico (Orcutt).
2087 Thais plicata
Synonymy:—Buccinum plicatum Martyn (1789).—Purpura crispata, etc. (See Nautilus 24:37 for fuller data.)
2088 Variety **septentrionalis** Reeve.
2089 Thais emarginata
Synonymy:—Purpura saxicola Val., etc.
2090 Stearns, Robert Edwards Carter:
Descriptions of new West American land, fresh-water, and marine shells, with notes and comments. U S Natl Mus pr 13:205-225 t 15-17.
Describes as new, or mentions among others Nos. 2091-2095.

2091 Helix (Arionta) Magdalenensis
Type locality:—Magdalena, Son., Mexico (V. Bailey), among rocks on top of a mountain 1000 ft. above the sea.

2092 Holospira semisculpta
Type locality:—San Carlos, Chih., Mexico (T. W. Stanton).

2093 Melania acutifilosa
"Shell slender, elongated; whorls rounded, convex; sutures much impressed. Spire eroded above the 4th whorl. Surface sculptured with strong thread-like revolving keels alternating with broad channels; of these keels there are usually 6 on the body whorl, sometimes more, and generally 3 only on the preceding whorls, of which the upper 2 are rather the most prominent and are usually interrupted and regularly broken up, producing an evenly crenulated chain. Following the wind of the shell and just below the sutures, the whorls broadly slope to the succeeding keel, which gives the shell a turrited outline. Surface of shell a very dark horn color, blackish; aperture small, ovate, inside lighter colored than the surface, the substance of the shell being thin and partially translucent, the keels showing through on the inside of the mouth, when held up to the light. Dimensions of the largest: longitudinal 16.5, latitudinal 7.5 mm." —Stearns, U. S. Natl Mus pr 13:211, t 15 f 9.
Type locality:—Eagle Lake, Cal. (Henry W. Henshaw).

2094 Mitra nodocancellata
Type locality:—Gulf of Cal. (W. J. Fisher).

2095 Venericardia barbarensis
"Shell rounded, inequilateral, variable in outline, more or less oblique, moderately convex. Beaks small, slightly elevated and turned forward. Surface ornamented with 19-20 radiating ribs usually somewhat granulose, and generally obscure on the extreme anterior and posterior margins of the valves. Epidermis a dingy yellowish brown, thicker towards the ventral margin and sides of the valves; thin and commonly eroded at or towards the umbos. Lunule small, slightly sunken, faintly defined. Hinge line small, not thick; hinge composed of, in the left valve, a single strong cardinal sloping posteriorly and a smaller tooth often obscure, slanting anteriorly; a 3d tooth-like process is generally present, situated under and apparently a projection of the edge of the lunule. This latter varies much in prominence in different specimens, and is often but barely perceptible. The hinge in the right valve is characterized by a single strong cardinal tooth with a slanting, somewhat sinuous groove above, and a slight notch and tooth-like point below the upper part of the lunule; this latter character is frequently inconspicuous and feeble. The valves are rather thin and somewhat translucent, bluish white on the inside and showing the ribs when held up to the light. Dimensions. from umbones or beaks to opposite edge 15, from anterior to posterior edges 15 mm, varying the fraction of a millimeter in either or both of these dimensions in different individuals."—Stearns, U. S. Nat. Mus pr 13:214, t 16 f 3, 4.
Type locality:—off Santa Barbara Islands, Cal., in 276 fms.

2096 Venericardia borealis
Stearns, l. c., t 16 f 8, which see for range and synonymy.

2097 Lucina æquizonata
"Shell moderately convex, dull white chalky where eroded;

epidermis of a dull dingy light yellowish tinge, finely wrinkled in old specimens, and inclined to be deciduous and slightly flaky or ragged; in young shells, translucent, shiny, and nearly colorless. Valves transversely ovate, being broader than high; the posterior side is abruptly squarish, and the dorsal line slants gradually from the umbones; on the anterior side the dorsal outline is moderately concavely curved away from the beaks, and in young and perfect specimens a very slight angulated pinch may be seen extending from the lunule to the anterior edge of the valves. The beaks or umbones are small, inclined toward the lunule; the lunule is quite narrow, alternately lanceolate and elongated. Surface of valves transversed with fine concentric growth lines, and prominent rather regularly spaced thread-like ridges. Hinge line curved and showing 2 diverging cardinal teeth in each valve; the anterior one in the left valve, and the posterior one in the right valve, notched or partially cloven. Elongated, tuberculoid lateral teeth in both valves at extreme limit of dorsal or hinge line. Dimensions: from beaks to ventral margin 37.5, from anterior to posterior edges of valves 46.25 mm. Individuals otherwise of same dimensions vary much in rotundity; two examples measure, 21.75 and 17.75 mm. diameter or thickness."—Stearns, U. S. Natl Mus pr 13:220 t 17 f 3, 4.

Type locality:—off Santa Barbara Islands, Cal., in 276 fms.

2098 Periploma planiuscula Sby.

Synonymy:—Periploma argentaria Conr., which see.—P: lenticularis Sby.—P: alta C. B. Ad.—P: excurva and excurvata Cpr.

2099 Stearns, R. E. C.

Report on the mollusk-fauna of the Galapagos Islands with descriptions of new species. U. S. Nat. Mus. pr. 16:353-450 t 51-2.

On rare or little known mollusks from the west coast of North and South America, with descriptions of new species. l. c. 341-352, t 50.

Mentions Nos. 2100-2106.

2101 Onchidella Binneyi

Erroneously referred to O: Carpenteri. Gulf of Cal. (W. J. Fisher).

Stearns, U S Natl Mus pr 16:342 t 20 f 1-2.

2102 Fusus ? polygonoides Lamarck.

Catalina Island, Cal. (W. J. Fisher).

2103 Murex palma-rosæ Mexicana

Gulf of California..

2104 Ocinebra lugubris

Synonymy (fide Stearns):—Murex lugubris Sby.—M: erinaceoides Val.—M: californicus Hds.—M: californicus Reeve.

La Paz, Baja California, etc.

2105 Purpura hippocastanum L.

Mulege bay, Baja Cal.—Viti, Samson and Pelew Isl.

2106 Ranella cruentata Sby.

Near Cape San Lucas, Baja Cal.—Utilla Isl., Honduras (C. T. Simpson).—Viti Islands.

2107 Stearns, R. E. C.

Notes on recent collections of North American land, freshwater, and marine shells, received from the U. S. Department of Agriculture. U. S. Natl Mus pr 16:743-755. Mentions Nos. 2108-2109, from Ft. Huachuca, Arizona.

2108 Helix (Patula) Hemphilli
2109 Helix (Triodopsis) Levettei Bland.

2110 Dall, William Healey:
Land shells of the genus Bulimulus in Lower California, with descriptions of several new species. U. S. Natl Mus pr 16:639-647 t 71-72. Mentions Nos. 2111-2123 as from Lower California.

2111 Bulimulus pallidior Sby.
Synonymy:—B: vegetus Gould.
2112 Bulimulus (Scutalus) Montezuma Dall.
Synonymy:—B. proteus Dall. non Broderip.
2113 Bulimulus Baileyi Dall.
2114 B: (Drymæus) californicus Reeve.
2115 B: (Mesembrinus) Xantusi W. G. Binney.
Synonymy:—B. Gabbi Crosse & Fischer.
2116 B: (Leptobyrsus) artemesia W. G. Binney.
2117 B: (Leptobyrsus) inscendens W. G. Binney.
2118 B: (Leptobyrsus) excelsus Gould.
2119 B: (Leptobyrsus) spirifer Gabb.
2120 B: (Leptobyrsus) Bryanti
2121 B: (Leptobyrsus) veseyanus Dall.
2122 B: (Orthotomium) sufflatus Gould.
2123 B: (Orthotomium?) pilula W. G. Binney.

2124 Dall, William Healey:
Report on the mollusks collected by the international boundary commission of the United States and Mexico, 1892-1894. U. S. Nat Mus pr 19:333-379 t 31-33.
Notes on Pyramidula strigosa and var. concentrata; Thysanophora Hornii; Epiphragomorpha Arizonensis, magdalenensis, hachitana, coloradoensis; Polygyra levettei, chiricahuana, ashmuni, pseudodonta, Mearnsii; Holospira species; Bulimulus species; and various other shells from Texas to California, including Nos. 2125-2132.
2125 Bulimulus (Orthotomium) Beldingi
Mts. of southern Baja Cal. (Eisen and others).
2126 B: (Orthotomium) Cooperi
San Jose del Cabo, Lower Cal.
2127 B: (Orthotomium) decifiens
Sierra San Lazaro, near Cape San Lucas, Lower Cal. (Eisen).
2128 B: (Orthotomium) levis
2129 B: (Orthotomium) ramentosus
Near San Jose del Cabo, Baja Cal. (Eisen and others).
2130 Aplexa hypnorum
Drift of the Santa Cruz river, near Tucson, Arizona.
2131 Planorbis Liebmanni Dunker.
Mts. San Diego Co., Cal.
2132 Sphærium solidulum Prime.
San Bernardino river, Arizona.
2133 Epiph. Arnheimi
Dall, U. S. Nat. Mus pr 18:6, 19:375. San Pablo bay, Contra Costa Co., Cal.

2134 Dall, William Healey:
Synopsis of the family Veneridæ and of the North American recent species. U. S. Nat. Mus. pr 26:335-412 t 12-16.
West American species mentioned (not already enumerated) are Nos. 2135-2190 (all occurring south of the Gulf of Cal. are omitted).

2135 Dosinia (Dosinidia) Dunkeri Philippi. 1844.
Magdalena bay, Baja Cal.—Head of Gulf of Cal.—Santa Elena, Colombia.
2136 Dosinia (Dosinidia) Annæ Cpr. 1857.
Gulf of Cal.—Mazatlan, Sin.
2137 Clementia solida Dall. 1902.
Topolobampo, Sin., Mexico.
2138 Transennella tantilla Gould. 1853.
Sitka, Alaska.—Todos Santos bay, Lower Cal.
Pleistocene of Santa Barbara, Cal.
2139 Tivela planulata Sby. 1829.
Gulf of Cal.—Ecuador.
2140 Tivella hians Phil. 1851.
Magdalena bay, Baja Cal.—Valparaiso, Chili.
2141 Tivela arguta Roemer. 1864.
Gulf of Cal.—Panama.
2142 Tivela Byronensis Gray. 1838.
Scammon's Lagoon, Lower Cal.—Ecuador.
2143 Tivela Delesserti Deshayes. 1854.
Scammon's Lagoon, Baja Cal.—Acapulco, Mexico.
2144 Tivela stultorum Mawe.
Synonymy:—Pachydesma crassatelloides, etc.
2145 Macrocallista squalida Sowerby. 1835.
Cerros Island, Baja Cal.—Peru.
2146 Macrocallista aurantiaca Sby. 1831.
Gulf of Cal.—Peru.
2147 Macrocallista pannosa Sby. 1835.
Gulf of Cal.—Valparaiso, Chile.
2148 Macrocallista puella Cpr. 1864.
Gulf of Cal. to Acapulco, Mexico.
2149 Callocardia (Agriopoma) Catharia Dall. 1902.
Ballenas bay, Baja Cal.—Gulf of Cal.—Panama.
2150 Pitaria Newcombiana Gabb. 1865.
Monterey, Cal., to Clarion Island, and the Gulf of Cal., in 15-31 fms.
Thin and delicate, with zigzag brown markings and a papery periostracum when fresh.
2151 Pitaria unicolor Sby. 1835.
Humboldt bay, Cal.—Panama.
2153 Pitaria vulnerata Brod. 1835.
Magdalena bay, Lower Cal.—Panama.
2154 Pitaria lupanaria Lesson. 1832.
Ballenas bay, Baja Cal.—Payta, Peru.
2155 Pitaria rosea Brod. & Sby. 1829.
Gulf of Cal. to Panama.
2156 P: (Lamelliconcha) concinna Sby. 1835.
Magdalena bay, Lower Cal.—Ecuador.—Peru.
2157 P: circinata alternata Brod. 1835.
2158 Cytherea (Ventricola) Fordi
Santa Barbara Islands, Cal.—Panama.
See description under Venus Fordi; Dall says it is quite distinct from Venus toreuma of the Polynesian Islands.
2159 Cytherea (Ventricola) Magdalenæ Dall. 1902.
Off Magdalena bay, Baja Cal.—Panama bay, in 18 fms.
2160 Cytherea (Ventricola) rigida Dillwyn. 1817.
Gulf of Cal.—West Indies.
Synonymy:—Venus isocardia Verrill (1870); not V. rigida Gld. 1850.
2161 Cytherea multicostata Sby. 1835.
Gulf of Cal.—Panama.—Galapagos Islands.

2162 Saxidomus giganteus
Synonymy:—Venerupis gigantea Deshayes. 1839.—Saxidomus squalidus of authors (not Deshayes—a South American).—S: Nuttallii of some lists—not Conrad.
2163 Cyclinella subquadrata Hanl. 1845.
Gulf of Cal., in 7-25 fms.—St. Elena, Colombia.
2164 Cyclinella Kroyeri Phil. 1847.
Gulf of Cal., in 14-26 fms.—Chile.—Peru.
2165 Cyclinella Singleyi Dall. 1902.
Guaymas, Sonora, Mexico.
2166 Chione compta Brod. 1835.
Gulf of Cal., in 21-26 fms.—Peru.
2167 Chione purpurissata Dall. 1902.
Gulf of Cal.—Cape San Lucas.
2168 Chione pulicaria Brod. 1835.
Gulf of Cal.—Chiriqui, Colombia.
2169 Chione amathusia Phil. 1844.
Gulf of Cal.—Panama.
2170 Chione (Lirophora) Kellettii Hds. 1844.
Gulf of California.—Panama.
2171 Chione (Lirophora) Mariæ Orb. 1847.
Gulf of Cal.—Guayaquil.
2172 Chione (Timoclea) asperrima Sby. 1835.
Gulf of Cal., at La Paz.—Payta, Peru.
2137 Marcia Kennerleyi Rve. 1864.
Kadiak Island, Alaska.—Monterey, Cal., in 8-18 fms.
2174 Marcia (Venerella) subdiaphana
Synonymy:—Clementia subdiaphana Cpr. 1865.
Unimak Pass, Alaska.—Catalina Island and San Pedro bay, Cal. (see Mrs. Burton Williamson, Nautilus 6:116).
2175 Paphia grata
Turtle bay, Baja Cal.—Panama.
Synonymy:—Venus discors, tricolor, fuscolineata, and histrionica of Sby. (1835).—V: muscaria Reeve, 1863,—etc.

2176 Paphia staminea
Japan.—Alaska.—Cape San Lucas.—Socorro Island.
"The typical form is elegantly radially ribbed with fine even riblets, the concentric sculpture inconspicuous, the color yellowish white with pale purplish brown modulations. This has been collected at Crescent City, Cal., and southward to the limits of its range, though the species is not abundant anywhere south of Monterey, Cal."—Dall.
Synonymy (of typical form):—Venus mundulus Reeve, 1863.—V: dispar and ampliata Gld. ex Cpr. 1857.—Chione straminea Desh. (non Sby.).

2177 Variety petiti Desh. 1839.
Synonymy:—Tapes diversa Sby.—Venus rigida Gld.
The form especially abundant north of the Columbia river. Larger than the southern variety, of a yellowish, chalky white, or dull gray, without maculations; and the separation of the sculpture into areas is often well marked. San Diego, Cal.—Todos Santos bay, Baja Cal.

2178 Variety laciniata Cpr. 1864.
Monterey, Cal.—Todos Santos bay, Baja Cal.
This extremely elegant variety is evenly reticulated by concentric and radial sculpture, and derives its individuality from the development of small prickles or spines at each intersection.

2179 Variety ruderata Deshayes. 1853.
This form, which is found chiefly in the north, is characterized by the turgidity and prominence of the concentric sculpture, which becomes more conspicuous than the radial ribs. Occasionally the shells are delicate and elegant, but usually specimens of this variety are rude and irregular, coarse and unattractive.

2180 Variety orbella Cpr. 1864.
Synonymy:—Tapes staminea tumida Cpr. (not Tapes tumida Sby.).—Chione Conradi Roemer. 1867.
This form comprises individuals which have nestled in the borings of large Pholads, and have been obliged to grow into an abnormally swollen and tumid shape; usually chalky and of a gray tint. Abundant at Monterey, Cal. San Diego, Cal.

2181 Variety sulculosa Dall. 1892.
San Ignacio lagoon, Baja Cal. The concentric sculpture obsolete, ribs fewer and stronger, and behind the middle of the shell separated by equal or even wider unsculptured channels or interspaces; color pure white.

2182 Paphia (Callithaca) tenerrima
Victoria, B. C.—San Quentin bay, Baja Cal.

2183 Liocyma Beckii Dall. 1870.
Northern Japan.—Plover bay, Siberia.—Unalaska.
Shell subtrigonal, inflated, with yellow or greenish periostracum, and irregular concentric sulci. Length of largest individual 18, diam. 8.5 mm.

2184 Liocyma viridis Dall. 1871.
Point Barrow, Arctic ocean.—Kadiak Island, Alaska.—North Japan.
Shell oval, quite inæquilateral, when fresh of an olive-green or rich olive-brown color, bleaching on the beach to cream color, with regular, rather distant concentric sulci; subcompressed, sometimes almost rostrate behind. Max. length 38, diam. 13.5 mm.

2185 Liocyma Scammoni Dall. 1871.
Port Simpson, B. C. (Scammon).
Brown, dark, solid, with heavy hinge and strong, prominent ligament; umbones more central and pallial sinus more shallow than in other known species. Max. length 24, diam. 11.5 mm.

2186 Venerupis lamellifera
Synonymy:—Venus lamellifera Conr. 1837.—Petricola cordieri Desh. 1839.—Rupellaria lamellifera Cpr.
Farallones Islands, Cal.—Baja Cal.
Very irregular, with obsolete radial and often very strong, distant, concentric lamellæ; under favorable conditions, especially in adolescent specimens, the lamellæ may be thin and sharp; young brightly colored, adults dull and earthy, tho near its southern range it becomes more porcellanous.

2187 Venerupis foliacea Desh.
Cape San Lucas.—Panama.
Synonymy:—Venus troglodytes Moerch.—Tapes squamosa Cpr. (the nepionic young).—Venerupis paupercula Desh.(?).

2188 Psephidia Lordi

Synonymy:—Chione Lordi Baird, 1863.—Psephis Lordi Cpr.

Port Etches, Alaska.—Catalina Island, Cal., in 4-15 fms.

White, pale green or straw color, quite trigonal and plump, often containing the nepionic young.

2189 Psephidia ovalis

"Shell small, white, polished, oval, subcompressed; surface with obsolete concentric threads near the anterior base, but over most of the disk smooth; beaks small and very low, at about the anterior third of the length; lunule elongated, extremely narrow, nearly as long as the anterior dorsal slope; escutcheon linear or none; interior white, the pallial sinus moderate, pointed; internal margin delicately striated; hinge well developed, like that of P. Lordi, with 3 entire cardinals and no anterior lateral tooth. Length 8.5, height 6.5, diam. 3 mm."—Dall, U. S. Natl. mus pr 26:407.

Type locality:—north side of Catalina Island, Cal., in 16 fms. —Bering Sea to San Diego, Cal., in 3-20 fms.

2190 Gemma gemma Totten, 1834.

Variety **purpurea** H. C. Lea. 1842.

Cape Cod to the Bahamas.—Texas.—San Francisco, Cal., introduced with oysters about 1899.

More inflated than typical form, trigonal, and with uniform concentric threads sharply defined; color variable.

Synonymy:—G: concentrica Dall, 1889.

2191 Dall, William Healey:

Synopsis of the family Astartidæ, with a review of the American species. U. S. nat mus pr 26:933-951, t 62-63.

Nos. 2192-2201 are species not already listed.

2192 Astarte alaskensis

"Shell ovate, subcompressed, white, with a dark, strong, caducous periostracum, which, like that of A. elliptica, becomes black in the dead or senile shells; valves quite inæquilateral, beaks at the anterior third, elevated, slight compressed, prosagyrate; lunule excavated, sublanceolate, the escutcheon longer and wider; sculpture of about a dozen concentric riblets with wider interspaces, more feeble near the ventral and posterior margins; inner margins entire, smooth; hinge solid, the teeth narrow and entire. Height 26, length 31.5, diam. 14 mm."—Dall, t 63 f 2.

Type locality: Unimak Island, in 70 fms.

2193 Astart polaris

"Shell rounded-trigonal, moderately thick, bluish white, covered with a slightly polished light-brown periostracum; valves moderately convex, with the umbones high, somewhat prosogyrate, over a well-impressed lanceolate lunule, which is unequally divided, the right valve bearing the larger share; escutcheon narrower and longer than the lunule, impressed, smooth; sculpture of 40 or more small, narrow, regular, concentric riblets separated by about equal interspaces; in the adult the posterior slope and ventral 3d of the disk have the riblets replaced by somewhat uneven concentric striation; interior smooth, the inner margins finely evenly crenate; hinge rather solid, the middle cardinal in each valve grooved or bifid. Height 25, length 28, diam. 15 mm."—Dall, t 63 f 5.

Type locality:—Shumagin Islands, Alaska, in 51 fms. Also Greenland.

2194 Astarte Rollandi Bernardi. 1858.
"Suborbicular, nearly smooth, large and heavy, with dark chestnut brown periostracum, which in the adults is dehiscent on drying. Avatcha bay, Kamschatka. Pribiloff Islands, etc.
2195 Variety loxia Dall.
A pale oblique form from oceanic islets, Chika, the Semidis and Middleton, in 12-25 fms.

2196 Astarte arctica Gray, 1824.
Bering Sea, Aleutian Islands, etc.

2197 Astarte borealis Schum. 1817.
Polar Sea.—Port Etches, Alaska.—Yokohama, Japan.

2198 Astarte fabula Reeve. 1855.
Polar sea.—Greenland.—Nunivak Island, Alaska.

2199 Astarte Bennettii
"Shell small, thin, subcuneate, subcompressed, with a polished olivaceous periostracum; posterior end shorter, bluntly rounded; anterior end longer, more sloping and direct dorsally, rounded; base nearly straight in the young; surface finely concentrically striate, or nearly smooth, the striæ more apparent on the beaks; lunule narrow, lanceolate, impressed, escutcheon similar, a little longer than the lunule; beaks high, slightly prosogyrate; hinge delicate, the large cardinals slightly grooved above, the laterals apparent; pallial line rather near margin, which is not crenulate. Height 10.5, length 15, diam. 7 mm."—Dall, t 63 f 6.
Type locality:—Bennett Island (Newcombe).—Bering Sea, in 24 fms. (Dall).

2200 Astarte vernicosa
"Shell small, subcompressed, subtrigonal, subequilateral, covered with a brilliantly polished olivaceous brown periostracum; beaks rather high, slightly prosogyrate, lunule narrow, lanceolate, impressed, escutcheon similar but longer; base arcuate, anterior end rounded, posterior end slightly more produced; hinge delicate, inner margins smooth, hinge teeth much as in A: Bennettii. Length 17, height 15, diam. 6.7 mm."—Dall, t 63 f 1.
Type locality:—off Icy Cape in 15 fms. (Dall).
Synonymy:—A. Warhami Leche.

2201 Venericardia crassidens
Based on Astarte crassidens Brod. & Sby., Zool J 4:365 (1829).
Icy Cape (Belcher).

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2202 Bartsch, Paul:
The Urocoptid mollusks from the mainland of America in the collection of the U. S. national museum. U. S. nat mus pr 31:109-160 t 3-5.
Chiefly Mexican, the following from Baja California (Nos. 2203-2205).

2203 Cœlocentrum irregulare Gabb.
2204 Cœocentrum minorinum Gabbi
2205 Cœocentrum Eisenianum (See No. 2925).
2207 Holospira oaxacana
Bartsch, l. c. 132, t 4 f 5. Tomellin, Oax. (Orcutt).

2208 Holospira cionella
Ft. Bowie, Arizona (J. H. Ferris).
2209 Holospira regis
Sierra Co., N. M.
2210 Holospira chiricahuana
Cave creek, Chiricahua Mts., Ariz. (J. H. Ferris).
2211 Holospira tantalus
New Mexico or Arizona (Edward Palmer).

2212 Myoforceps aristatus Dillwyn.
"My friend, F. W. Kelsey, of San Diego, Cal., recently sent me a peculiar Lithophagus, taken near that city, which I at once recognized as a Myoforceps, and Dr. Dall afterwards kindly determined the species as M. aristatus Dillwyn. The finding of this interesting species, with its elongate, crossed ends, in shell ground which has been well worked for so many years, is worthy of note and to the credit of the enthusiastic collector named. The fact that mature specimens are found imbedded in hard rock is proof that it is not of very recent introduction."—Fred L. Button, Nautilus 13:131. March 1900.

2213 Pupa calamitosa Pilsbry, Phila ac pr 1889 411, t 12, f 16-17.
Shell cylindrical, very blunt at apex, chestnut colored; whorls 4½, the first 1½ smooth, the following regularly costulate striate, the costulæ separated by spaces wider than themselves; last whorl abruptly turning forward. rounded beneath, encircled by a slight central constriction or furrow; aperture about 1-3 the total length of shell, rounded, truncated above, contracted within; peristome thin, expanded, without crest or callous thickening behind; columellar margin rather dilated; parietal wall bearing 2 entering lamellæ, 1 arising near the termination of the outer lip, the other more deeply seated, elevated, entering less obliquely; columella with a strong white deep-seated obliquely entering fold; outer lip with 2 short white lamellæ. Altitude 1.7, diameter .8 mm. Near the mouth of the Santo Tomas river, Lower California, collected by Henry Hemphill; and near San Diego, Cal., by Orcutt.

2214 Vitrinella williamsoni Dall.
"Shell small, white, with 2½ whorls; spire flattened; suture appressed with a shallow channel or excavation outside of the appressed margin of the whorl, outside of which the convexity of the whorl rises higher than the suture. Base slightly more rounded than the upper side, with a wide and flaring umbilicus; periphery rounded; aperture rounded, oblique; surface polished, finely striate here and there by the incremental lines which are most prominent above. Maximum diameter of shell, 5.5; minimum diameter, 4.5; altitude 1.25 mm. Beach at San Pedro, Cal.; U. S. National Museum, registered number 106,855. This species, which is rather large for a Vitrinella, is respectfully dedicated to Mrs. M. Burton Williamson, to whose researches this paper is due. The name being inherently masculine, the usual genitive ending is preserved."—Dall, U S Nt Mu, pr, 15:202, t 21, f 2-3 (2 Ag 1892).

2215 Acmæa morchii
"Shell conical, much elevated, with a sub-central recurved apex resembling that of Helcion pectinatus covered with close-set, rough, imbricated ribs and riblets, the coarse, imbricated, sharp lines of growth forming with the other sculpture a close reticulation in some specimens. Interior with a brown-mottled spectrum

and margin, otherwise white; exterior dull grayish or greenish speckled. The imbrications on the principle ribs very strong, in some specimens forming small spines concave beneath. Lat. 16, lon. 20, alt. 10 mm. Tomales bay, Cal. (Henry Hemphill). Mus. Cat. 31268."—Dall, U S Nat mu pr 1:47 (1878).

2216 E. (Micrarionta) Guadelupiana

"Shell small, thin, depressed, of a dark-brownish color with a narrow reddish band, bordered on each side by a pale streak, just above the periphery; spire little elevated, suture distinct; epidermis strong, in well-developed specimens slightly microscopically hirsute; sculpture of well-marked incremental lines, stronger on the spire, with occasional microscopic punctations; base more or less flattened, the last whorl with the periphery somewhat above the middle of the whorl, umbilicus narrow and deep; aperture sub-circular, very oblique with a strong whitish reflection of the peristome, the ends of the lip on the body approximated, throat with the bands showing through. Alt. of shell 6, diam. 10.5, aperture diam. 4.5 mm.

"Guadelupe Island, off Lower California, in N. Lat. about 29 degrees, Anthony, 1896; Snodgrass and Heller, 1899.

"This very well-marked little species is nearest to E. Catalinæ, but is well depressed, with a larger umbilicus and differently shaped aperture. It seems to be tolerably abundant, though most of the specimens received were defective."—Dall, Phila ac pr 1900: 101, t 8, f 14, 15.

2217 Epiphragmophora leucanthea

"Shell with 5½ rather convex whorls; pale lavender, nearly white below, with an obsolete white peripheral band, above which the whorl is more or less tinged with pale bluish gray, a translucent band above the peripheral one through which the dark brown with which the interior of the whorls is lined may show through more or less distinctly; nuclear whorls with wavy radial striæ, visible under a lens, for a whorl and a half, translucent; succeeding whorls opaque, except as stated, polished, with rather distinct incremental lines and obsolete vermiculations or malleations; base rounded, perforate, with the umbilicus nearly closed by the columellar reflection; aperture rounded, the outer lip slightly reflected, white, with the throat brown internally; body without callus, pillar short, arcuate, with no thickening or denticle upon it. Major diam. 28, minor 23.5, alt. of shell 20, of aperture 15 mm.

Eastern side of Cerros Island, Anthony, 1896.

"This is evidently a derivative from E. Veatchii, from which it differs in the absence of the numerous interrupted brown bands, in the usually blunter and lower spire and more distinct and deeper sutures."—Dall, Phila ac pr 1900: 99, t 8, f 18, 20.

2218 Epiphragmophora Orcutti

"Shell globose, moderately elevated, polished, with nearly 6 moderately convex whorls forming a dome-like spire; color purplish brown, lighter toward the umbilicus; a narrow pale band on the last whorl bordered behind by a darker brown, poorly defined, similar band, both being above the periphery and the suture in the earlier whorls being laid on the anterior edge of the darker line; nucleus flexuously radiantly wrinkled, pale colored; subsequent whorls with fine incremental wrinkles the ridges of which are cut by revolving, partly obsolete incised lines; as a rule these lines are not deep or continuous, cutting merely the tops of the wrinkles

and not the furrows between them; suture distinct, last whorl rounded, plump, toward the aperture descending below the pale band; base plumply rounded, the umbilicus covered by a reflection of the pillar-lip with a minute chink behind it; aperture very oblique, thickened, whitish, reflected, especially near the pillar; throat livid brownish with the bands well indicated. Major diam. of large and small specimens, respectively, 24 and 22.5, minor diam. 20 and 18.5, alt. 19 and 16 mm.

"Habitat: Rosario mesas, in Northern Lower California, in May, 1886, by C. R. Orcutt.

"This form much resembles in shape the typical E. Kellettii, from which it differs in the absence of the yellow flecking and the different surface sculpture. E. Kellettii is also a more globose shell. The same stock, doubtless, was the origin of both species, as well as several others."—Dall, Phila ac pr 1900: 104-105, t 8, f 19.

Under living and dead Maguey plants (Agave shawii), with levis and Stearnsiana, exceeding rare in comparison. Major diam. of largest specimen obtained 27, minor 22, alt. 19 mm. This is from the type locality of Stearnsiana, which was much more abundant and differing not at all from San Diego specimens. Orcutt No. 1321. It has more the aspect of the tudiculata than the Kelletti group. One specimen was quite elevated, 24 mm alt.

2219 Epiphragmophora Stearnsiana

Hemphill considered this as a variety of Kelletti, and it so appears in Pilsbry's list.

Under Helix.—"Shell narrowly umbilicated; sub-globose, solid, of a dirty white color, irregularly mottled with crowded ashy blotches, grouped into revolving series below, with a decided wide, brownish revolving band above; with delicate oblique incremental striæ, unequally cut by revolving lines; spire elevated; whorls 5, rather convex; aperture oblique, semi-circular; peristome simple, acute, its columellar termination white, expanded, reflected over half concealed umbilicus. Greater diam. 22,1 esser 17; height 12 mill.

"Helix stearnsiana Gabb, Am J Conch 3:235, t 16, f 1 (1867).

"Lower California, from Sta. Tomas to Rosario, under stumps of Maguey. (Gabb.) The shell figured and described was received from Dr. Newcomb. It may not be entirely mature."—B-B, 177, f 310.

"San Martin Island, in N. Lat. 30 degrees, 30 minutes, Anthony, 1896."—Dall Phila ac pr 1900, 101.

2220 Epiphragmophora crassula

"Shell small, solid and heavy, smooth, with 5 whorls; spire rather pointed, suture distinct, not deep, last whorl evenly rounded at the periphery; color opaque white with more or less numerous very pale brown subtranslucent spiral bands, all or part of which may be absent; usually there is a peripheral white band and between it and the suture one or two translucent bands of which the anterior is most constant; from 2-4 narrower translucent bands may exist in front of the periphery; the base is rounded, at first minutely perforate, later imperforate and sealed by a reflection of the pillar lip; aperture rounded, slightly oblique, with a solid white, slightly reflected peristome, but no callus on the body; pillar broad, short with a conspicuous callosity. Alt. of shell 15, of aperture 6, lat. of shell 15.5, of aperture 7.5 mm.

"Natividad Island, 10 miles south of Cerros Island, Anthony, 1896.

"This species is an offshoot of E. levis Pfr., from which it differs by its small, and much heavier shell, fewer whorls conspicuous peristome and narrower, fewer and less interrupted banding of a paler tint."—Dall, Phila ac pr 1900: 100, t 8, f 3.

2221 Epiphragmophora areolata

Under Helix.—"Shell perforated, orbicularly conoid, striated, shining, white, variously ornamented with revolving interrupted reddish lines; spire depressed conoid; whorls five, rather convex, the last scarcely descending, somewhat convex at base; aperture roundly lunar, smoky within; peristome acute, somewhat thickened within, its columellar portion slightly arched, dilated, reflected, with one tooth-like callosity (sometimes wanting), and almost covering the umbilicus. Greater diam. 26, lesser 23; height 18 mm.

"Helix areolata, Sowerby, Brit. Mus.—Pfeiffer in Zeitschr f Mal 1845, 2:154; Mon Hel Viv 1:152; in Chemnitz ed 2, 1:248, t 36 f 10-13.—Philippi, Icon 2, 15, 184, t 9 f 4 (1847).—Gould, Terr Mol 3:15.—W. G. Binney Ter Moll 4:19 t 76 f 3, 11.—Reeve, Con Icon 664.

"Polymita areolata, Tryon Am J Conch 2:319, t 23 (6) f 5 (1866).

"Arionta veitchii, Tryon, Am J Conch 2:316 t 5 f 19 (1866).

The specimens figured are from Cerros Island, California. The species is also quoted from Oregon, and is referred by Newcomb to Margarita Bay."—B-B 177-178, f 211.

Margarita bay, Lower California, Newcomb; Natividad Island, Anthony, 1896. Mistakenly referred to Oregon by Tryon.

"Though doubtless similar in origin and in coloration, areolata is smaller than Veatchii and has a more depressed spire, and on the whole is easily separable from the latter if a good series is compared."—Dall Phila ac pr 1900, 100.

The 4 f in B-B f 311 represents levis in the 2 outer and Veatchii in the 2 inner f.

2222 Epiphragmophora Catalinæ

" 'Helix tenuistriata' W. G. Binney (as mutation of H. Gabbi), Land and fresh-water shells of North America, part 1, page 175, f 305, 1869; not of A. Binney, 1842.

"Arionta Gabbi, W. G. Binney, U S Na mu b No. 28, 148, f 130, 1885.

"This form was collected on Catalina Island by H. Hemphill, and, while obviously a member of the Gabbi-facta group, seems perfectly distinguishable from the other members of that group. There is a very large series of Gabbi and facta in the collection of the National Museum, and, notwithstanding their variability I do not find any specimens which are not readily referred to one or the other, and none intermediate between these and catalinæ. The name tenuistriata had previously been used specifically by A. Binney, and was repudiated for this shell by his son. As the original tenuistriata A. Binney has never been identified, and in the case of the present species the name would have to rest anonymous, it seems better to apply a local name to it which is free from any uncertainty. It has a small deep umbilicus partly shaded by the reflected pillar lip and a broadly reflected peristome, the ends of which upon the body are not approximated. It measures as follows: Alt. of shell 7, diam. 12, diam. aperture 4.5 mm. There are 5½ rounded whorls and the entire shell is finely spirally striate. It is also found fossil on Santa Barbara Island, but the fossil specimens are often considerably larger than the largest

living specimens now known; one measures 15 mm. in major diameter and nearly 10 mm. in height."—Dall, Phila ac pr 1900: 103.

2223 Epiphragmophora levis

Under Helix.—"Shell perforate, globose, thin, smooth, obliquely striate, obsoletely granulated, white, varied with regular series of spots or bands of horn-color; spire short, rather acute; whorls 5, scarcely convex, the last inflated; aperture roundly lunar, within somewhat yellow; peristome acute, somewhat thickened within, its columellar portion dilated above, arched and reflected, almost covering the perforation. Greater diam. 16, lesser 14; height 13 mill.

"Var. b. The columellar portion of the peristome with a single obtuse, tooth-like callosity.

"Helix levis, Pfeiffer Mon Hel Viv 1:54; 3:128; Zeits f Mal 1845, 2:152; in Chemnitz ed 2, 1:249, t 36 f 16, 17 (1846).—Reeve Con Icon 1214.—W. G. Binney Terr Moll, 4:18 t 76 f 10.

"Polymita levis, Tryon, Am V Conch 2:320 t 5 f 21? (1866).

"Columbia river. Dr. Newcomb doubts its being a Californian or Oregon species."—B 180 f 316. Figure is marked 'var.'

"Rosalia bay, mainland of Lower California, in N. lat. 28 degrees, 30 min., Anthony 1896. Erroneously referred to the Columbia river by Pfeiffer."—Dall Phila ac pr 1900, 100.

2224 Epiphragmophora Pandoræ

Under Helix.—"Shell imperforate, globose-conic, rather solid, reddish above, violet on the apex, ashy below, bound with numerous, interrupted, light blotches and lines; whorls five, rounded, suture impressed; aperture subcircular; peristome narrowly reflected, white, its ends approaching; throat bluish; columella thickened, rounded. Greater diameter 17, lesser 16; height 14 mm.

"Helix pandoræ, Forbes, Zool soc pr 1850, 55 t 9 f 3 a, b.—Con Icon 671.—Pfeiffer Mon Hel Viv 3:127; in Chemnitz ed 2, 3:467 t 156 f 17, 18 (1853).—Gould Ter Moll 3:15.—W. G. Binney Terr Moll 4:18 t 76 f 8.

"Helix damascenus, Gould, Boston Soc Nat Hist pr 6:11 (O 1856).

"Polymita pandoræ, Tryon, Am J Conch 2:320 t 6 f 8 (1866).

"Margarita Bay, Lower California. The specimen figured wants the characteristic revolving lines and blotches."—B-B 179-180 f 315.

Stearns in N Y ac annals 2:136 says he regards "H. areolata, pandoræ, Veatchii and levis as varieties of a single species."

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2225 Dall, William Healey; An index to the Museum Boltenianum. Washington, 1915. 64 p.

The catalog of Dr. J. F. Bolten's collection was first published in 1798, and under the law of priority, many of his names are the first binomials applied to the species of shells they refer to.

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2226 Berry, S. Stillman: The Cephalopoda of the Hawaiian Islands. From U. S. bureau of fisheries bulletin. 32:257-362, pl 45-55 (1912).

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2227 Dall, William Healey: A monograph of the molluscan fauna of the Orthaulax pugnax zone of the Oligocene of Tampa, Florida. U. S. Nat'l Mus. bull. 93. Wash. 1915. 173 p.

2228 **Frierson,** L. S.: A new pearly freshwater mussel of the genus Hyria from Brazil. U. S. Nat'l Mus. pr 47:363, pl 12. Wash. 1914.

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2229—**Dall,** William Healey: On some generic names first mentioned in the "Conchological Illustrations." U. S. Nat'l Mus. pr 48:437-440. Wash. 1915.

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2230 **Henderson,** John B., and Paul Bartsch: Littoral marine mollusks of Chincoteague Island, Virginia. U. S. Nat'l Mus. pr 47:411-421, pl 13-14. Wash. 1914.

2231 **Macrochasma crenulata**

The Great Keyhole Limpet of the Pacific Coast has received a new generic name at the hands of Dr. Dall (see 6). It is the Fissurella crenulata of Sowerby, better known under the name Lucapina crenulata of later authors. It is the largest and finest of the family, the white shell often four inches long, marked by many radiating ribs and concentric lines of growth; it has a large, oblong hole to one side of the center, around which, internally, is a thick rim of enamel. The crenulated or scalloped edge of the shell is a marked feature, and suggested its name. Internally the shell is of a pure, glossy white, but the outside is somewhat dingy. The animal is much larger than its shell, with a huge yellow foot and a black mantle, which nearly conceals the shell which rests upon its back. Keep says it lives wholly below the tides, and must be gathered by dredging, but at San Diego it is frequently found on the rocks at low tide, or in shallow pools, among the seagrass with Aplysia californica. Dall speaks of very young specimens as of a lurid pink. Occurs from Monterey, California, to Baja California.

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2232 **Arnold,** Ralph, and Harold Hannibal: The marine tertiary stratigraphy of the north Pacific coast of America. Am Phil soc pr 52:559-605, pl 37-48, 1913.

2233 **Arnold,** Ralph: Descriptions of new cretaceous and tertiary fossils from the Santa Cruz mountains, California. U. S. Nat'l Mus pr 34:345-390, pl 31-37. Wash. 1908.

2234 **Arnold,** Ralph: New and characteristic species of fossil mollusks from the oil-bearing tertiary formations of Santa Barbara county, California. Smithsonian misc coll 50:419-447, pl 50-58. 1907.

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2235 **Hannibal,** Harold: See Ralph Arnold.

2236 **Bartch,** Paul: See John B. Henderson.

2237 **Hemphill, Henry:**

A collector's notes on variations in shells, with some new varities. Zoe 1:321-337, t 10.

Edible mollusks of western North America. Zoe 2:134-139.

Note on Helix yatesii Cooper. Zoe 2:45-47.

Studies among mollusks—instinct and genera. Zoe 2:312-318.

Notes on the animals of some west coast shells. Zoe 3:350-2.

Catalogue land, fresh water and marine shells of California and adjacent states. Leaflet (not seen).

Catalog of North American shells collected and for sale by. July 1890. 26 p.

Descriptions of some varieties of shells, with short notes on

the geographical range and means of distribution of shells. San Diego soc. nat. hist. tr. 1:85-113 (1911).

In this last named paper are described the following:

2238 Murex carpenteri tremperi
Newport, Cal.

2239 Ocinebra stearnsi
Monterey, Cal.

2240 Helix loricata sonomaensis
Healdsburgh, Sonoma Co., Cal.

2241 Tonites wascoensis
Wasco Co., Oregon.

2242 Helix walkeriana
San Luis Obispo, Cal., with the next.

2243 Variety Morroensis

2244 Circinaria kelseyi
San Mateo and San Luis Obispo counties, Cal.

2245 Helix avalonensis
A variety of the strigosa group. Catalina Island, Cal.

2246 Berry, S. S.:
Note on the occurrence of a giant squid off the California coast. Nautilus 25:117. Records a specimen 30 feet across floating in Monterey bay, Cal., not Dosidicus gigas.

2247 Dosidicus gigas D'Orbigny.
This attains a length of 4 or 5 feet, and frequents the waters off the Californian shores as far north as Monterey, Cal.
Synonymy:—Ommastrephes gigas D'Orbigny.

2248 Æsopus goforthi Dall.
Named in honor of W. C. Goforth, who is supposed to have collected it at Monterey, Cal.
"Shell smooth, slender, elongate, with inconspicuous sutures and about 8 whorls; nucleus defective, smooth; subsequent whorls gradually increasing, moderately convex; color greenish-waxen with flammules of dark chestnut so arranged on the last whorl as to form 2 irregular bands, one above and the other below the periphery, which also show in the interior of the aperture and on the base of the pillar; the paler portion of the surface is also irregularly mottled with opaque whitish blotches Aperture short, rather wide; the outer lip simple, sharp, smooth within; body and pillar smooth, with a thin wash of callus; canal short, wide, not recurved. Length of shell 13, of last whorl 6, of aperture 4, max. diam. of shell 3.3."—Dall, Nautilus 25:127.

2249A Genus **Grippina** Dall.
"Shell slightly inequivalve, donaciform, small, with a well-marked, rounded, ascending pallial sinus; right valve receiving the dorsal edges of the left in grooves beneath its own dorsal margins; cardinal teeth 2, large, subequal, prominent, horizontally produced and fitting under the beak of the left valve; resilium strong, compressed, situated between the 2 cardinals attached under the beak of the left valve, and having on its ventral surface a thin calcareous coating or ossiculum."—Dall, Nautilus 25: 128. Allied to Corbula. Type:—

2249 Grippina californica Dall.
"Shell minute, subtrigonal, whitish, solid for its size, finely concentrically sculptured; beaks moderately elevated, smooth; inner margins of the valves smooth, the left valve with no hinge-plate; a narrow lanceolate lunule and subequal, similar escutch-

eon present; each bounded by a marked ridge; outside of the escutcheon a second radiating ridge extends from the beak to the lower posterior margin of the valves but without producing a notable angulation of the margin. Interior of valves dull white, the muscular impressions and pallial line distinct. Length 2.5, height 1.2, diam. 0. mm."—Dall, Nautilus 25:128.

Type locality:—off San Diego harbor, Cal., in 16-20 fms. Dredged by C. W. Gripp, in whose honor it is named.

2250 Rochefortia grippi Dall.

"Shell small, thin, equilateral, ovoid, with a dull brownish periostracum, more or less incrusted with iron oxide, and sculptured only by feeble incremental lines. Beaks inconspicuous, hinge as in the genus, bearing 2 very small diverging cardinals in one valve with a rather strong resilium between them which seems to carry a small lithodesma; opposite valve edentulous; pallial line entire; inner margins of the valves simple. Length 4.5, height 2.5, max. diam. 1.3 mm."—Dall, l. c.

Type locality and collector same as the last.

2251 Henderson, Junius:

Oreohelix colonies in Colorado. Nautilus 25:133 26:9-11.

2252 Oreohelix hendersoni

Pilsbry, Nautilus 26:29. Near Longmont, Colorado.

2253 Sonorella argus

"Shell small, depressed, flesh-colored, with a narrow brown band encircling the whorls a little above the periphery. This shell approaches very nearly S. Fisheri, Bartsch but differs in color, size, and in having a wider umbilicus. Type measures: Maj. lat. 11.3, min. lat. 9.5, alt. 5.7, aperture: maj. lat. 6, alt. 5.3, umbilicus 2 mm. 2—Edson, Nautilus 26:37.

Type locality:—Iron cap copper mine, Argus range, Inyo Co., Cal. (A. M. Strong).

2254 Epiph. dupetithouarsi cuestana

Edson, Nautilus 26:37. Cuesta pass, Santa Lucia Mts., Cal. (Hannibal).

2255 Edson, Henry M.:

Notes on the validity of Helix (Epiphragmophora) oregonensis Lea. Nautilus 26:49.

Considers E: mormonum as synonymous. Type locality:—Oregon.

2256 Lymnæa auricularia L.

Henderson, Nautilus 26:84, records this from Colorado Springs, Colorado. Introduced.

2257 Oreohelix carinifera

Type locality:—Garrison, Montana.

2258 Holospira mesolia

Type locality:—Sanderson, Texas.

The last 2 species are described in Nautilus 26:89, by Pilsbry.

2259 Galba montanensis Baker, Nautilus 26:115.

Type locality:—near Ward, Montana.

2260 Berry, S. Stillman:

A list of mollusca from the Musselshell valley, Montana. Nautilus 26:130. Mentions the following (Nos. 2261-2262).

2261 **Vallonia costata montana Sterki.**
2262 **Succinea retusa** Lea.

2263 **Hanham, A. W.:**
Notes on a few British Columbia marine shells. Nautilus 26: 133.

2264 **Dall, W. H.:**
Shells collected at Manzanillo, West Mexico, Oct., 1910, by C. R. Orcutt, identified by William H. Dall. Nautilus 26:143.
Reprinted, as follows, numbers 2265-2328.

2265 **Gadinia peruviana Sby.**
2266 **Siphonaria lecanium Cpr.**
2267 **Bulla punctulata Ads.**
2268 **Terebra variegata** Gray.
2269 **Conus princeps** Brod.
2270 **Conus arcuatus Sby.**
2271 **Conus nux Brod.**
2272 **Conus gladiatus Brod.**
2273 **Mitra funiculata** Reeve.
2274 **Vasum cestrum** Brod.
2275 **Lyria barnesii** Gray.
2276 **Latirus ceratus** Wood.
2277 **Purpura triserialis** Blainv.
2278 **Cantharus sanguinolentus Duclos.**
2279 **Nassa corpulenta** C. B. Adams.
2280 **Columbella major** Sby.
2281 **Columbella festiva Cpr.**
2282 **Anachis coronata** Sby.
2283 **Anachis sulcosa** Sby.
2284 **Nitidella cribraria** Lam.
2285 **Muricidea dubia** Sby.
2286 **Craspedotriton scalariformis** Brod.
2287 **Morum tuberculosum** Sby.
2288 **Cypræa arabicula** Lam., var.
2289 **Trivia pacifica** Gray.
2290 **Strombus gracilior**
2291 **Cerithium maculosum** Kien.
2292 **Cerithium gemmatum** Hinds.
2293 **Cerithium uncinatum** Gmel.
2294 **Planaxis nigritella Forbes.**
2295 **Variety —?**
2296 **Litorina conspersa** Phil.
2297 **Hipponyx grayanus** Menke.
2298 **Crepidula onyx** Sby.
2299 **Calyptræa mammillaris Brod.**
2300 **Trochita spirata Forbes.**
2301 **Crucibulum imbricatum** Brod.
2302 **Natica chemnitzianum Pfr.**
2303 **Polynices uber** Val.
2304 **Scurria mesoluca** Menke.
2305 **Turbo squamigerus** Reeve.
2306 **Uvanilla unguis Mawe.**
2307 **Tegula globula** Cpr., dark variety.
2308 **Nerita bernhardi** Recl.
2309 **Fissurella alba** Cpr.
2310 **Fissurella microtrema** Sby.
2311 **Fissurella rugosa** Sby.
2312 **Chiton albolineatus** Sby.

2314 Perna chemnitzianum Orb.
2315 Lima pacifica Orb.
2313 Arca grandis B. & S.
2316 Phacoides lamprus Dall.
2318 Cardium magnificum Desh.
2319 Venericardia crassicostata Sby.
2317 Cardium consors Sby.
2320 Venericardia cuvieri Brod.
2321 Anomalocardia subimbricata Sby.
2322 Chione undatella Sby.
2323 Paradione squalida Sby.
2324 Tellina cumingi Hanley.
2325 Tellinoides viridotincta Cpr.
2326 Semele proxima C. B. Ad.
2327 Thracia plicata Desh.
2328 Tagelus politus Cpr.

From the same locality, identified by Dr. Dall, I have also numbers 2329-2332.

2329 Planorbis petenensis Morel.
2330 Columbella fuscata Sby.
2331 Purpura floridana Conr.
2332 Codakia distinguenda Tryon.

2333 Orehelix haydeni betheli
Pilsbry & Cockerell, Nautilus 26:144. Glenwood Springs, Colorado.

2334 Galba ferruginea
Frank C. Baker, Nautilus 26:24, records this from Oswego, Oregon. Also recorded from Cal. and Washington.

2335 Lowe, H. N.:
Shell collecting on the West Coast of Baja California. Nautilus 27:25.
Numbers 2336-2358 are mentioned, among others.

2336 Mitromorpha gracilior Hemphill.
2337 Mitra lowei Dall.
2338 Marginella politula Cooper.
2339 Cerithiopsis alcina Bartsch.

2341 Cerithiopsis (Cerithiopsis) carpenteri
Type locality:—Terminal Island, Cal. Named in honor of Philip P. Carpenter. San Diego, Cal.
"Shell broadly elongate-conic, dark chocolate brown. Nuclear whorls 3, smooth, well rounded, separated by a slender suture, forming an elongate-conic spire. Post-nuclear whorls well rounded, marked by 3 strong, broad, spiral bands which are as wide as the spaces that separate them. Of these, the 1st and widest is at the summit, the next is median, while the 3d is a little posterior to the suture. In addition to the spiral keels, the whorls are marked by slender, rounded, axial ribs which are about half as wide as the spiral cords. Of these ribs, 20 occur upon the 1st and 2d, 22 upon the 3d to 5th, 24 upon the 6th and 7th, 28 upon the 8th, and 30 upon the penultimate turn. The junctions of the axial ribs and spiral cords form strong, elongated tubercles, having their long axes parallel with the axial sculpture. The tubercles at the summit are well rounded anteriorly and pos-

teriorly; those of the median series are a little more suddenly rounded anteriorly than posteriorly; while those belonging to the supraperipheral cord are truncated suddenly posteriorly and slope gently anteriorly. The spaces between the spiral cords and axial ribs are small, moderately rounded, well impressed pits. Suture constricted, showing a portion of basal cord. Periphery of last whorl marked by a deep, spiral groove as wide as that separating the first supraperipheral cord from the median spinal cord, and, like it, crossed by the continuations of the axial ribs. Base short, well rounded, marked by a broad, spiral cord which is truncated posteriorly and slopes gently anteriorly toward the shallow well-marked groove which separates it from the base proper. Entire surface of spire and base marked by numerous, very slender, incremental lines. Aperture irregularly oval, very strongly channeled anteriorly; posterior angle obtuse; outer lip thin, showing the external sculpture within, rendered decidedly sinuous at the edge by the external sculpture; columella stout, moderately long, the edge reflected; parietal wall glazed with a thin callus."—Bartsch.

2342 Columbella penicillata Cpr.
2343 Odostomia helga Dall & Bartsch.
2344 Modiolus opifex Say.
2345 Eulima bitorta Van.

2346 Turbonilla buttoni Dall & Bartsch.
The above were collected on San Geronimo Island, the following on Cerros Island.

2347 Triton gibbosum
2348 Conus gradatus Mawe.
2349 Cymatium corrugatum Lam. (See 2557).
2350 Latirus lugubris C. B. Adams.
2351 Arca reeviana Orb.
2352 Columbella fasciata Sby.
2353 Ischnochiton acrior
2354 Ischnochiton didymus Bartsch.
2355 Ischnochiton clathratus
2356 Ischnochiton conspicuus
2357 Callistochiton crassicostatus
2358 Callistochiton decoratus

2359 Henderson, Junius:
Some Wyoming shells. Nautilus 27:37.

2360 Oreohelix hendersoni dakani
Junius Henderson, Nautilus 27:38.
Type locality:—near Newcastle, Colorado.

2361 Pilsbry, H. A.:
Note on a new variety of Epiphragmophora tudiculata. Nautilus 27:49. Describes var. Grippi, with figures, and mentions the following named varieties:—

2362-2368 Varieties cypreophila, umbilicata, convicta, subdolus, tularensis, binneyi, and grippi.
2369 Oreohelix yavapai extremitatis
Shell creek canyon, Shell, Wyoming.
2370 Oreohelix pygmæa
Same locality. Pilsbry, Nautilus 27:52.

2371 Gundlachia Hjalmarsoni Pfr.
Geo. H. Clapp, Nautilus 27:77 records this from the drift of the Rio Grande, at Brownsville, Texas. Type locality:—Honduras.

2372 Baker, Frank C.:
Northern Idaho shells. Nautilus 27:104.

2373 Ashmunella pilsbryana
Jas. H. Ferris, Nautilus 27:109, describes this from near Clifton, Arizona.

2374 Ferriss, James H.:
Camps in the Catalinas and White Mts., of Arizona, with description of a new American land shell. See above.

2375 Dall, W. H.:
Notes on some West American Pectens. Nautilus 27:121.
Notes on the following, among others.
2376 Pecten (Euvola) cataractes Dall. Gulf of Cal.
Synonymy:—P. excavatus Val.
2377 Pecten hericius Gould.
Port Althorp, Alaska, to San Diego, Cal.
2378 Variety **albida** Dall.
2379 Pecten islandicus Mull.
Arctic regions to Strait of Fuca.
2380 Pecten rubidus Hinds.
Bering Sea to Cape San Lucas. Same as Hindsii Cpr.
2381 Sonorella betheli
Henderson, Nautilus 27:123. Grand canyon, Arizona (Ellsworth Bethel).
2382 Pisidium huachucanum Pils.
Nautilus 27:144; Colorado, 7500 ft. elevation (Hand).
2383 Ostrea iridescens Gray, 1854.
Gulf of Cal., to Mazatlan.
2384 Ostrea megodon Hanley, 1845.
Gulf of Cal., to Peru. West Indies (fossil).
Synonymy:—O. gallus Val.—O. Taylori Gabb.
2385 Ostrea fisheri Dall.
Based on O. Jacobæa Roch., non L.
Gulf of Cal. Named in honor of W. J. Fisher.
2386 Ostrea veatchii Gabb, 1866.
Large, rather roundly plicated, internally with olive, brown stains and white margin. Baja Cal., Gulf of Cal. Fossil at San Diego, Cal., and on Cerros Island.
2387 Ostrea cumingiana Dunker.
Synonymy:—O. amara Cpr.—O. angelica Roch.
Baja Cal., to Panama.
2388 Variety **Mexicana** Sby.
2389 Ostrea palmula Cpr.
Puget Sound to La Paz, Baja Cal.
2390 Ostrea serra Dall.
Baja Cal., to Panama.
2391 Ostrea columbiensis Hanley.
Baja Cal., to Peru.
2392 Ostrea elongata Solander. 1786.
Synonymy:—O. Virginica Gmel. 1792.—O. rostrata and floridensis Sby.—O. virginiana, canadensis and borealis Lamarck, 1819.
2393 Ostrea chilensis Philippi.
Gulf of Cal., to Chile.

2394 Ostrea multistriata Hanley. 1846.
Gulf of Cal., to Panama.
2395 Ostrea tubulifera Dall.
Gulf of Cal. (H. Edwards). The above notes are taken from Dall, Nautilus 28:1-3.

2396 Acmæa limatula Cpr., 1866.
Synonymy:—A. scabra Nutt., not Gld.
The more common species at San Diego, Cal., and at Todos Santos bay, Baja Cal.; sometimes beautifully mottled like pintadina Gld. (Dall).

2397 Acmæa scabra Gould.
Dall, Nautilus 28:14, says this is what has been known as A. spectrum—a name which will have to be abandoned in consequence. See above.

2398 Acmæa semirubidia Dall.
Gulf of Cal., to Panama.

2399 Clark, Bruce L.:
The marine molluscan fauna from the vicinity of Bolinas bay, Cal. Nautilus 28:25-28.
The following are recorded, not already appearing in this list under these names.

2400 Tegula funebrale A. Ad.
2401 Tegula brunnea Philippi.
2402 Tegula montereyi Kien.
2403 Tegula pulligo Martyn.
These are familiar as Chlorostoma, of older lists.

2404 Monia macroschisma Desh.
2405 Pecten giganteus Gray.
2406 Ischnochiton raymondi Pilsbry.
2407 Olivella intorta Cpr.
2408 Polynices draconica Dall.
2409 Acanthina engonata Conr.
The Monoceros of former lists.
2410 Bittium eschrichti Midd.
2411 Muricidea californica Hinds.

2412 Pilsbry, H. A.:
Shells of Duran, N. M. Nautilus 28-37-38.
Describes one new var. on page 38, as follows.

2413 Pupilla muscorum xerobia

2414 Hanham, A. W.
Notes on mollusks from British Columbia. Nautilus 28:87.

2415 Ferris, James H.:
Our N. M. expedition of 1914. Nautilus 28:109.

2416 Musculus phenax Dall, Nautilus 28:138.
Type locality:—St. George Island, Bering Sea. ....

2417 Gonidea angulata Lea.
Vanatta, Nautilus 28:143, note on occurrence at Oswego, Oregon.

2418 Zirfœa gabbi Tryon.
Chace, Nautilus 28:144, note on occurrence in Anaheim bay, Cal.

2419 Lowe, Herbert N.:
Notes on the mollusk fauna of San Nicholas Island. Nautilus 17:66.

2420 Acmæa gigantea Gray.
Recorded in above list.

2421 Sonorella walcottiana
Bartsch, Wash. Biol. soc. pr 16:103-104.
Type locality:—Palm Springs, Riverside Co., Cal.

2422 Schismope rimuloides Cpr.
Pilsbry, Nautilus 17:84, records from San Diego, Cal. (Hemphill).
Originally published as Scissurella, from Mazatlan.

2423 Trivia ritteri Raymond.
"Shell small, white, form ovate, inflated, anterior extremity slightly produced, spire completely covered, but rather prominent, base convex, outer lip margined, strongly sculptured with about 20, smooth, sharp ribs, much narrower than the interspaces which are nearly flat and scarcely roughened by irregular rugæ parallel to the axis of the shell, no sulcus, the ribs continuing unchanged in width across the back, except that occasionally a few ribs near the spire are interrupted at the median line; a few short intercalary ribs are usually present on the sides of the shell; aperture rather wide, armed with 17 to 18 denticulations on the outer lip, and 14 to 16 on the inner. Two extreme specimens in size measure: length 11:5, breadth 8.6, height 7.2 mm; length 8.2, breadth 6.5, height 5.7 mm."—Raymond, Nautilus 17:85.
Catalina Island, in 60 fms.—Monterey (Dall).—Off San Pedro, Cal., in 50 fms. Named in honor of William E. Ritter.

2424 Periploma sulcata
"Shell rotund, white, with the left valve flatter, thin, sculptured with numerous, close-set, irregularly concentric, more or less interrupted, low ridges, separated by subequal shallow interspaces, the surface is also microscopically shagreened, and there is a low rib extending from the beak to the lower margin of the ill-defined rostrum and an ill-defined furrow radiating from the beak toward the anterior base, in the right valve; beaks low, distinctly fissured; anterior dorsal hinge line rounded, posterior ditto, shorter, nearly rectilinear, forming with the elevated rib a subtriangular space which is free from the undulations which cover the rest of the shell; interior shining, hardly nacreous, the muscular impressions very small, the pallial line obscure; chondrophores prominent, spoon-shaped, extending obliquely forward, and with their connecting resilium sustaining a proportionately large triangular lithodesma; the chondrophores are supported behind by well-developed clavicular props, which are inserted posteriorly on the surface of the valve below the linear hingeline. Length 32, height 27, diam. of right valve 6 and of the left valve 4 mm."—Dall, Nautilus 17:122.
Type locality:—San Pedro, Cal. (Mrs. T. S. Oldroyd).

2425 Dentalium vallicolens
"Adult shell large, rather slender, moderately curved poste-

riorly, the latter half nearly straight; cream-white, often yellowish toward the mouth, shining where not eroded, earlier portion usually dull and chalky because of erosion; growth-lines fine, irregular, distinct, rarely an encircling groove due to repaired fracture; at the apex there are longitudinal, low, rounded, inconspicuous threads, of which 7 or 8 are more prominent and 3 to 6 in each interspace are less prominent; these die out, and fine, superficial striæ appear, visible under the glass and continued to the mouth of the shell, 7 or 8 per millimeter of circumference; aperture simple, circular, mouth slightly oblique. Two specimens measure: length 64.5, diam. of aperture 5.3, of apex 1.5, at middle 4.6, height of arch from chord 2.5, mm.; length 64, diam. of aperture 4.7, of apex 1.4, at middle 4.2, height of arch from chord 3 mm."—Raymond, Nautilus 17:123.

Off Santa Monica, and San Diego, Cal.

2426 Pleurotoma (Genota) Stearnsiana

"Shell broadly fusiform, spire acute, outline of spire moderately convex; whorls 8½, convex anteriorly, slightly concave near the suture, the margin at the suture strongly appressed; suture distinct; aperture longer than the spire; color orange to cream, a broad, spiral, brown band below the suture and 9 or 10 narrow, clearly-defined bands on the last whorl, 1 or 2 of these are also visible on the spire, bands nearly as wide as the lighter interspaces; interior of aperture yellowish, lighter within and spotted with brown on the outer lip by the external bands; first 2 whorls smooth, later whorls with numerous revolving threads, closely beaded on the spire by incremental lines which follow the outline of the lip, threads not beaded below the periphery of the last whorl, but roughened by the growth-lines and somewhat coarser anteriorly; aperture, rather narrow; posterior sinus shallow, rounded; lip acute, produced below the sinus, canal wide; pillar solid, somewhat curved, obliquely truncate below. Operculum normal. Long. of shell 30.5, of aperture and canal 17, of body-whorl 23 mm; max. diam. 13 mm. Divergence 50 degrees. An extremely old specimen which shows a thickening of the pillar like an obscure fold, measures: long. of shell 41.5, of aperture and canal 22.5, of body-whorl 29.5 mm.; max. diam. 18 mm. Divergence 49 degrees." Raymond, Nautilus 18:1.

Off San Diego, Cal., in 25-30 fms.—Catalina Island, 30-40 fms.

Named in honor of Dr. Robert Edwards Carter Stearns.

2427 Pleurotoma (Antiplanes) Catalinæ

"Shell sinistral, thin, elongated, slender, whorls 10-11; color light, pinkish brown, without bands, interior of aperture a little lighter; upper whorls more or less chalky; nucleus smooth, inflated; suture deeply impressed; sculptured by fine incremental lines and in the last whorl a few obscure, spiral striations, mostly below the periphery; anal fasciole traceable on the spire as a flattened or obscurely grooved band; aperture narrow; canal wide and short; pillar nearly straight, with a well-defined callus obliquely truncate below; outer lip produced, deeply emarginate near the sutural margin of the whorl. Long. of shell 27, of aperture and canal 10.5, max. diam. 7.6 mm. Divergence 20 degrees."—Raymond, Nautilus, 18:2.

Off Catalina Island, in 125 fms.—Off San Diego, Cal., in 50-106 fms.

2428 Pleurotoma (Genota) Riversiana

Raymont, Nautilus 18:14, Pliocene of Santa Monica, Cal. named in honor of J. J. Rivers.

2429 Pleurotoma (Genota) Tryoniana Gabb. Tertiary to recent.
2430 Pleurotoma (Genota) Cooperi Arnold. Quaternary.

2431 Lowe, H. N.:
A dredging trip to Santa Catalina Island, Nautilus 18:18.
Records the following, numbers 2432-2478, among others.

2432 Actæon Painei
Dall, Wash biol soc pr, 1903. Avalon, Cal.
2433 Admete gracilior Cpr.
2434 Angulus Carpenteri Dall.
Synonymy:—Angulus variegatus Cpr. (not Gmel.).
2435 Cadulus fusiformis P. & S.
2436 Cavolina Pacifica Dall.
2437 Clathurella Lowei
Dall, Wash biol soc pr, 1903. Avalon, Cal.
2438 Crenella Columbiana Dall.
2439 Chama muricata Hinds.
2440 Cuspidaria obesa Lov.
2441 Dentalium neohexagonum S. & P.
Shell thin, white, curved, 6-sided, about 2 inches long—the common sp. of southern Cal.
2442 Ischnochiton biarcuatus
Dall, Wash biol soc pr, 1903.
2443 Ischnochiton punctulatissimus Cpr.
2444 Lucina annulata Rve.
2445 Lucina approximata Dall.
2446 Lepidopleurus crebriscostatus Cpr.
2447 Lepidopleurus Mertensi Midd.
2448 Leptochiton nexus Cpr.
2449 Lunatia Draconis
Drake's bay, Monterey, and Farallones Islands, Cal.
Dall, Wash biol soc pr, 1903. Named for Sir Francis Drake.
2450 Macromphalina Californica
Dall, l. c.—off Avalon, Cal.
2451 Mangilia densistriosa Cpr.
2452 Mangilia Fancheræ
Dall, Wash biol soc pr, 1903.

2453 Metzgeria Californica
"Shell small, translucent white, with a pale straw-colored, dull, wrinkled and rather conspicuous periostracum; nucleus small, smooth, white, obliquely inclined, of nearly 2 whorls; there are 4 or 5 rounded subsequent whorls separated by a deep, not channelled suture; sculpture of about 9 rather prominent, rounded axial ribs extending from suture to suture and on the last whorl to the base, separated by wider interspaces and crossed by numerous subequal spiral threads, covering the whole shell, their wider interspaces striated by the incremental lines. Aperture about half as long as the shell, the outer lip sharp, the throat smooth and white; the pillar white, not callous, with 3 distinct, oblique plaits beside the slightly raised margin of the canal, these are only visible from the side of the aperture; anteriorly the pillar is tortuous, slightly recurved, open and rather wide. Length of shell 14, of aperture 7; width of shell 6 mm."—Dall, Nautilus 17:52.
Type locality:—Santa Barbara channel, Cal. (J. H. Paine).

2454 Mitra Lowei
Dall, Wash biol soc pr, 1903.
2455 Modiola polita Verrill.

2456 Murex Californicus Dall.
2457 Murex Painei
Dall, Biol soc Wash pr, 1903. Named in honor of J. H. Paine. Avalon, Cal.
2458 Muricidea incessa Brod.
2459 Muricidea Santarosana Dall.
2460 Natica russa Gld.
2461 Neara Californica Dall.
2462 Nucula Belloti A. Ad.
2463 Pandora bicarinata Cpr.
2464 Pecten Vancouverensis Whiteaves.
2465 Scala Sawinæ
Dall, Wash biol soc pr, 1903.
2466 Sistrum carbonarium Sby.
2467 Tegula peramabilis Cpr.
2468 Terebratella obsoleta Dall. See 512.
2469 Terebratella occidentalis. See 548.
2470 Turbonilla Lowei D. & B.
2471 Turbonilla Simpsoni D. & B.
2472 Turbonilla hypolispa D. &. B.
2473 Variety stylina Cpr.
2474 Turbonilla auricoma D. & B.
2475 Turbonilla aresta D. & B.
2476 Turbonilla tridentata catalinensis D. & B.
2477 Turbonilla latifunda D. & B.
2478 Williamia peltoides Cpr.
2479 Ferriss, James H.:
Southwestern shells. Nautilus 18:49.
Describes as new numbers 2480 and 2481.
2480 Ashmunella Walkeri
Florida Mts., Luna Co., N. M.
2481 Oreohelix Clappi
Chiricahua Mts., Arizona.
2482 Sonorella Lohrii lioderma
Pilsbry, Nautilus 18:59. Near Moleje, Baja Cal.
2483 Ashmunella Townsendi
Bartsch, Smith Misc Coll 47:13-14. Lincoln Co., N. M. (C. H. S. Townsend).
2484 Sonorella Ashmuni
2485 Sonorella Dalli
2486 Sonorella Baileyi
2487 Variety Orcutti Bartsch.
Bartsch, Smith Misc Coll 47:—, describes the above from the southwest as new.

2488 Sonorella Fisheri Bartsch, l. c.
2489 Phacoides (Miltha) Zantusi
Dall, Nautilus 18:111 proposes this name for the Gulf of Cal. shell, by error called Lucina childreni Gray—a Brazilian species.
2490 Oreohelix strigosa metcalfei
Cockerell, Nautilus 18:113. Mts. near Kingston, N. M. (O. B. Metcalfe).
2491 MacFarland, F. M.:
A preliminary account of the Doridida of Monterey bay, Cal. Wash biol soc pr 18:35-54 (2 F 1905).
Describes the following new genera and species, Nos. 2492-2509.
2492 Montereina
2493 Montereina nobilis
2494 Discodoris Healthi

2495 Rostanga pulchra
2496 Cadlina marginata
2497 Cadlina flavomaculata
2498 Doriopsis fulva
2499 Ægires albopunctatus
2500 Laila
2501 Laila Cockerelli
Also found at La Jolla and San Diego, Cal. (Ckll).
2502 Triopha maculata
2503 Triopha grandis
2504 Polycera atra
2505 Acanthodoris Hudsoni
2506 Acanthodoris brunnea
2507 Ancula Pacifica
2508 Hopkinsia
2509 Hopkinsia rosacea
Also collected at La Jolla, San Diego, Cal. (Miss V. Thomas).

2510 Williamson, Mrs. M. Burton:
Some West American shells. So Cal acad sci b 4:118, describes 3 forms as new (numbers 2511-2513).

2511 Corbula luteola rosea
2512 Drillia moesta maculata
2513 Calliostoma canaliculatum parvum

2514 Cerithidea sacrata hyporhyssa
Berry, Nautilus 19:133, f.—Smooth or nearly so, more tapering than the typical form, quite heavy and solid, callus of aperture lighter and browner, aperture smaller and less inflated. San Diego, Cal.

2515 Cerithidea sacrata pullata
A heavily ribbed form named by Gould.

2516 Lymnæa Hinkleyi
Baker, Nautilus 19:142. Snake river, Idaho (A. A. Hinkley).

2517 Whiteaves, J. F.:
Notes on some fresh-water shells from the Yukon territory. Nautilus 19:1.

2518 Hemphill, Henry:
A second contribution to West Coast conchology. Nautilus 19:5-8, 19-24.

2519 Epiph. sequoicola soquelí
"Shell broadly umbilicate, thickly and regularly striate, very dark brown approaching black, of uniform color with the exception of 2 parallel white bands above the middle of the body-whorl, shell depressed with depressed spire, whorls 7, the last much inflated, strongly banded within. Greater diam. 28, height 12 mm."—Rowell, Nautilus 19:41.
Type locality: "Santa Cruz Mts., Cal., midway between Soquel creek and Skyland."

2520 Oreohelix yavapai compactula
Cockerell, Nautilus 19:46. Pecos canyon, N. M. (pleistocene).

2521 Williamson, Mrs. M. Burton:

New varieties of Crepidula rugosa Nutt. found on Natica and on Norrisia. Nautilus 19:50. Names the next two forms.

2522 Crepidula rugosa naticarum
White, porcellanous, more pellucid, maculated with chestnut-colored spots. Found in situ in San Pedro bay, Cal., on Lunatia Lewisii.

2523 Variety Norrisiarum Williamson.
More porcellanous, interior light magenta-pink. Occurs on Norrisia Norrisii and heretofore determined as Crepidula adunca Sby.

2524 Crepidula nivea glottidiarum
Dall, Nautilus 19:26. Uniformly straight, convex, smooth, equilateral, white and posteriorly attenuated. Found in situ on Glottidea albida.

2525 Leda amblia
"Shell chalky under a polished dark olive-green periostracum, compressed, rostrate, concentrically and feebly irregularly striate, with obscure microscopic radial lines; lunule narrow, lanceolate; escutcheon, long, wide smooth and slightly concave, the valve margins rising slightly in the median line; valves bluntly rounded in front, bluntly truncate behind, the rostrate portion not set off from the body by any constriction, and the radial subangular lines which bound the rostral area are feeble and obscure; interior whitish, with a deep subumbonal impression, a very shallow and obscure pallial sinus, very short siphons, 12 or 13 anterior, 18 or 19 posterior normal hinge teeth, with a narrow, backwardly oblique socket for the resilium. Lon. of adult shell 18, alt. 9.5, diam. 5.5, vertical of the beaks behind anterior end 7 mm."—Dall, Nautilus 18:123.
Type locality:—Monterey bay, Cal.

2526 Magilia perattenuata
Type locality:—Monterey bay, Cal. (Woodworth).
"Shell small, very slender, with one smooth turgid nuclear, and 6 smooth normal whorls; the whorls are but slightly convex, whitish, the suture very distinct, its posterior margin slightly overhanging or dominant; aperture narrow, short, simple, the outer lip slightly concavely waved between the periphery and the suture, canal short, a little recurved, relatively rather wide. Lon. of shell 9.5, of last whorl 3.75, max. diam. 2.5 mm."—Dall, Nautilus 18:125.

2527 Admete Woodworthi
Type locality:—Monterey bay, Cal., in 10-45 fms.
"Shell small, thin, whitish, with a yellow-brown periostracum, 5 normal, sculptured, and 1 smooth, turgid nuclear whorl, gradually increasing, subtabulate by a prominent spiral thread at the shoulder while young, rounded at the last whorl, with 8 or 9 obscure riblets on the upper part of the spire, which are obsolete on the last whorl and a half; spiral sculpture of rounded threads, with wider flattish, somewhat irregular interspaces; peristome continuous with a slight notch or sulcus near the end of the nearly straight pillar, and with no umbilicus; there are 2 obscure plaits on the pillar, which is not marked by any umbilical chink or fissure; aperture with the external sculpture modifying the margin, but no lirations. Lon. of shell 9, of aperture 4, max. diam. 4.5 mm."—Dall, Nautilus 18:123.

2528 Erato albescens

Off the Santa Barbara Islands, California, in 30-41 fms.

"Shell whitish, thin and polished, whorls 4; spire low and nearly covered with a thin glaze extending from near the aperture; shell bluntly pyriform with a wide mouth, smooth pillar, the outer lip thickened, obscurely marginate externally, with about 9 obscure distant denticulations internally, pillar short, twisted, with a flaring edge and almost gyrate axis; the body with a thin wash of callus, but, in the type no sign of pustulation. Lon. of shell 15, of aperture 13.5, max. diam. 10 mm."—Dall, Nautilus 18:124, 22:126.

2529 Scissurella (Schizotrochus) Kelseyi

Off San Diego, Cal. "Shell large for the genus, trochiform, white, with about 4 rounded whorls, sculptured with fine (forwardly convex) arcuate threads or raised lines, which above the fasciole are spirally microscopically striate, and on the base, with somewhat regularly spaced and stronger spirals; fasciole narrow, slightly above periphery, bounded by 2 sharp, very thin, elevated keeels; the slit extends about 1-fifth of the circumference of the last whorl. Aperture nearly circular, interrupted for a short distance by the body, the inner lip slightly reflected over a small umbilicus; operculum multispiral, pale yellow. Alt. of shell 6, of aperture 3, max. diam. 5.5 mm."—Dall, Nautilus 18:124.

2530 Murex (Phyllonotus) santarosana

"Shell small for the subgenus, with about 6 whorls, each bearing from 5-7 strong, low, reflexed varices, with a prominent short, reflexed and inflexed grooved spine at the shoulder of the whorl; nuclear whorls 1½, smooth, minute; nepionic whorls 2½, with the whorls tabulate, 2 strong spiral cords at the shoulder, the varices thin, irregular laminæ low and obscure; subsequent whorls, with 5 (increasing in adult to 7) strong, anteriorly crispate, amber-brown varices, under which the whorls are tabulate, the intervarical spaces whitish, nearly smooth or with very obscure revolving lines or threads; base of whorls somewhat constricted with a short grooved spine on each varix where it crosses the concavity; aperture obovate, small, with the inner lip smooth, the outer one more or less denticulate on the edge, the enamel whitish; canal long, anteriorly attenuated, the margins adjacent but not adherent. Height of adult 45, max. diam. of aperture 10.5 mm."—Dall, Nautilus 19:15.

Type locality:—off Santa Rosa Island, Cal., also off San Pedro, and Catalina Island.

2531 Alaba Oldroydi

Type locality:—San Pedro, Cal., 10 fms. (Mrs. Oldroyd).

"Shell small, polished, pale rufescent brown, with 7 whorls, the protoconch smooth, swollen, globose, the following whorl smooth and rather inflated, the subsequent whorls sharply spirally grooved with wider interspaces, crossed especially the earlier ones with a few irregular, low, half obsolete wrinkles, the whorls are flattish and sometimes slightly constricted in front of the suture; the aperture patulous, recalling that of Rissoina, the base rounded with no umbilicus. Length 5.25, max. diam. 2, length of last whorl 2.5 mm."—Dall, Nautilus 19:15.

2532 Raymond, William James:

West American species of Pleurotoma, subgenus Genota. Nautilus 20:37.

2533 Scala Lowei

"Shell small, conic, with 5 or more rapidly increasing whorls after the (lost) nucleus; color white, whorls very convex with deep sutures and a small, spiral umbilicus; there is no basal disk or cord; sculpture of about 27 rather thick, strongly reflected, smooth, close-set varices, and very close, fine, spiral threads, covering the whole whorl between the varices, and separated by about equal sulci; aperture sub-circular, slightly higher than wide, the reflected margin wide at the outer lip, patulous at the inner base, narrow between the shoulder and the preceding whorl, and at the shoulder produced into a short, rather stout spine which, repeated on successive varices, coronates the whorls. Length of shell (without nucleus), 7, max. diam. of aperture 2.5 mm."—Dall, Nautilus 20:44.

Type locality:—Avalon, Catalina Island, Cal., in 40-60 fms. (H. N. Lowe).

2534 Kelsey, F. W.

A healthy colony of Epiphragmophora tudiculata. Nautilus 20:61.

2535 Sphærium Hendersoni

Sterki, Nautilus 20:69. New Greeley, Colo.

2536 Whiteaves, J. F.

Notes on some land and fresh water shells from British Columbia. Ottawa Naturalist 20:115-119.

2537 Cardium (Cerastoderma) **fucanum**

Bering Sea, in 70 fms.—Monterey bay, Cal., in 20 fms.

"Shell small, plump, compact, solid for its size, covered with a smooth brown or gray periostracum usually more or less eroded; form varying from nearly circular to slightly ovate, with rather prominent slightly prosocœlous beaks, situated a little anterior to middle of shell; valves moderately convex, equal and nearly equilateral, sculptured with 40-58 similar, small, low, flattish radial ribs separated by much narrower interspaces; these ribs are not nodulous or keeled, they are sometimes slightly rippled by incremental lines, and, as usual, they are smaller, fainter, and more crowded distally; interspaces rounded; near the dorsal margins on each side of the beaks there is an ill-defined narrow space which is devoid of ribs; the average number of ribs is about 50; the inner margins of the valves are crenulated; hinge delicate, normal; inner surface of valves whitish, polished; outer surface usually shows 3 or 4 concentric sulci due to resting stages. Length 38, height 33, diam. 18 mm., of a fully adult specimen; a shorter variety measures 25.5, 24.5 and 16 mm. for the same dimensions."—Dall, Nautilus 20:112.

2538 Scala Berryi

"Shell small, white, 6-whorled; nuclear whorls polished, smooth, without striated varices, on the last whorl about 20 or 21; these varices are quite close-set, not angulated in front of suture and markedly reflected, with smooth interspaces; base with no basal disk or cord, the coil imperforate, peristome rather callous on pillar side. Long. 3.5, max. diam. 1.75 mm."—Dall, Nautilus 20:127. Named in honor of S. S. Berry.

San Pedro bay, in 200 fms.—Monterey bay, Cal., in 12 fms.

2539 Scala rectilaminata

"Shell very similar to S. berryi, with same number of whorls

and varices, but having the nuclear shell smaller, the test less heavy, the varices nearly vertical to the surface of the whorl, instead of reflected, which makes them appear sparser, tho' really the same number occur on the whorl; varices are narrower, peristome less heavy and wide. Long. 3.25, max. diam. 1.6 mm."—Dall, Nautilus 20:127.

Type locality:—Monterey bay, Cal., in 12 fms. (S. S. Berry).

2540 Scala (Cirostrema) Montereyensis

"Shell small (probably not full grown), the nucleus lost but with 5 subsequent rapidly increasing whorls; shell substance in 2 layers, inner translucent white, solid, outer opaque, frothy, porous, with numerous puncticulations arranged in harmony with the incremental lines, except on the basal disk where they form spiral lines; varices low, solid, with a spongy surface, 9; basal disk conspicuous, slightly concave; bordered by a conspicuous cord; aperture gibbous, patulous near the imperforate axis. Long. 2.5, diam. 1.5 mm."—Dall, l. c. 128.

Type locality:—off Del Monte, Monterey bay, Cal., in 25 fms. (S. S. Berry).

2541 Stearns, R. E. C. S.

Fossil mollusca from the John Day and Mascall beds of Oregon, Univ of Cal, Geol pub b 5:67-70. New species are Epiphragmophora dubiosa, Pyramidula Lecontei and Lymnæa maxima.

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2542 Cockerell, T. D. A.

Fossil mollusca of Florissant, Colo. Amer Mus Nat Hist b 22: 1906. New species are Omphalina laminarum, Planorbis florissantensis, Lymnæa Sieverti and Scudderi, and Sphærium florissantense. Proposes also Columna haydeniana as a new name for Bulimus teres M. & H. (not Oliver).

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2543 Pilsbry, H. A. and J. H. Ferriss:

Notes on some New Mexican Ashmunellas. Nautilus 20:133-4. Notes on forms No. 2544-2548.

2544 Ashmunella rhyssa townsendi

Based on No. 2483.

2545 Ashmunella rhyssa

2546 Variety **hyporhyssa**

Based on No. 2022.

2547 Variety **miorhyssa**

Based on No. 1962.

2548 Variety **edentata** Ckll.

2549 Stearns, R. E. C.

Abalones and the earthquake. Nautilus 20:135.

2550 Epiph. (Micrarionta) Hutsoni

Clapp, Nautilus 20:136. About 8 miles from Quartzsite, Yuma Co., Arizona (Geo. S. Hutson). Pilsbry, Nautilus 20:138, "on the soft anatomy."

2551 Bifidaria agna

Pilsbry & Vanatta, Nautilus 20:141. Trinidad, Colo.

2552 Mitra Fultoni

West coast of Mexico.

2553 Mitra Idæ Melville.

Synonymy:—Mitra maura, as to Californian literature; that of Swains is said to be Peruvian.

2554 Mitra orientalis Gray.

These shells are discussed and figured by Mrs. M. Burton Williamson, in Wash biol soc pr 19:— (1906).

2555 Zonitoides alliaria Drap.
Europe.—Boulder, Colo. in a greenhouse (see Nautilus 20: 144).

—o—

2556 Henderson, Junius:
Mollusca of Colorado. Univ of Colo studies 4:— (F & Ap 1907).

2557 Cymatium corrugatum tremperi
Periostracum blackish brown, coarse, lamellose with, on the varices, strong, sparse, projecting hairs reaching 6 mm in length; in the channels only 1 or 2 coarse irregular, markedly larger riblets. Length 85, aperture, including canal, 36, max. diam. 38 mm.; 5 rather prominent axial ribs on the last whorl between the last pair of varices. San Pedro, Cal. (R. H. Tremper).
Dall, Nautilus 22:85.

2558 Vitrea fagalis
Cockerell, Nautilus 22:89. Florissant, Colo. (Miocene).

2559 Vertigo occidentalis
"Shell of the shape, size and appearance of a smaller Vert. ovata Say, but perforated; short ovate, chestnut colored, transparent; slight impressions over the palatal folds, no crest, no callus inside; lamellæ and folds; parietal and angular close together, coherent, short, low, somewhat massive; columellar only indicated by a slight angular projection; the 2 palatals quite small, short, the upper close to margin. Alt. 2 mm. Soft parts not seen."—Dall, Nautilus 22:90.
Type locality: San Bernardino Mts., alt. 7600 ft. (S. S. Berry).

2560 Ilyanassa obsoleta
Nautilus 22:91, recorded from the oyster beds in San Francisco bay, Cal. (E. W. Gifford). Introduced from the Atlantic coast.

2561 Odostomia terricula
La Jolla, Cal. (Nautilus 21:92).

2562 Murex Carpenteri alba
Berry, Nautilus 21:105. Newport, Orange Co., Cal.
2563 Berry, S. S.
Molluscan fauna of the San Bernardino Mts., Cal. Nautilus 21:121.
Notes on Nos. 2564-2569 and others.
2564 Pisidium Californicum Newc.
2565 Musculium Raymondi Cp.
2566 Physa Cooperi Tryon.
2567 Physa politissima Tryon.
2568 Vitrina Alaskana Dall.
2569 Euconulus fulvus Drap.
2570 Turbonilla (Pyrgiscus) castanella
Substituted for T. (P.) castanea, U S Nat Mus pr — 109, by Dall, Nautilus 21:131, preoccupied name.
2571 Odostomia (Amaura) Canfieldi
Dall, l. c. substiuted for O. (A.) Montereyensis D & B, U. S. Nat Mus pr — 509.
2572 Milax gagates plumbea
Boulder, Colo., greenhouses, probably introduced from the Pacific coast.

2573 Vitrea lucida Drap. Colo.
2574 Micrarionta desertorum
Pilsbry & Ferriss, Nautilus 21:134 t 11 f 6-10.
Type locality:—12 miles south of Parker, Yuma Co., Arizona. (W. J. Gilchrist).

2575 Rissoa (Alvania) Grippiana
"Shell small, brownish, solid, cancellate, with 1½ smooth nuclear and 5½ sculptured whorls, nucleus flattish, blunt, remaining whorls rotund, evenly enlarging; last whorl with 13-14 axial ribs crossed by somewhat more slender, equal, equidistant, spiral threads not tuberculate at the intersections, with 3 somewhat stouter spirals on base; earlier whorls with 2 and then 3 spiral threads between sutures; suture indistinct, aperture obovate, rounded in front, slightly angular behind, with a much thickened lip which in senile specimens is duplex at the margin. There is a very minute chink but no umbilicus. Length 3, max. diam. 1.5 mm."—Dall, Nautilus 21:136.
Type locality:—Todos Santos bay, Baja Cal. (Hemphill).—San Diego, Cal., off entrance (C. W. Gripp).—Catalina Island.—San Pedro, Cal.

2576 Bela Grippi
"Shell small, straw-color or pale brown with occasional spiral bands of darker brown, or all brown; whorls 6, first 1½ white, polished, smooth and turgid, subsequent portion of shell having a dull surface; earlier whorls with the periphery nearer the anterior suture, the whorl behind the periphery somewhat flattened and compressed, crossed by low obscure riblets, about 12 on the 4th whorl, which become obsolete later; whorl in front of periphery shows no axial sculpture; the whole whorl is spirally sculptured with narrow sharp incised lines, one dividing the space behind the periphery, and about 5 in front of periphery on penultimate whorl; on last whorl between periphery and siphonal fasciole about 12 of these lines, tho they probably vary in number with the individual, while the incremental lines are moderately conspicuous; outer lips thin, simple; pillar lips with a small deposit of white callus; aperture narrow, lunate; canal very short, wide, with an inconspicuous fasciole. Length 9, of spire 5, of aperture 4, max. diam. 3.5 mm."—Dall, l. c. 137.
Type locality:—off San Diego bay, Cal., in 15 fms. (C. W. Gripp).

2577 Berry, S. S.
Molluscan fauna of Monterey bay, Cal. Nautilus 21:17-22, 34-35, 39-47, 51-52.

2578 Smith, Maxwell:
Annotated list of mollusca found in the vicinity of La Jolla, San Diego Co., Cal. Nautilus 21:55-59, 65-67.

2579 Bailey, Jr., Joshua L.
Shells of La Jolla, Cal. Nautilus 21:92 (list of species omitted from above list that he has collected).
The above three faunal lists not checked up for this work.

2580 Pilsbry, H. A.:
Shells of Grant, Valencia Co., N. M. Nautilus 19-130.
Among others, are noted numbers 2581-2589.
2581 Valvata humeralis Say. (See 2679.)

2582 Vertigo Coloradoensis Arizonensis
2583 Heliodiscus parallelus
2584 Pupilla muscorum
2585 Pupilla Blandi
2586 Pupilla syngenes dextroversa
2587 Pupoides marginatus
2588 Pupoides hordaceus
2589 Bifidaria pellucida hordeacella

2590 Cockerell, T. D. A.:
Snails of New Mexico and Arizona. Nautilus 19:67-71.
In part a review of the next paper.

2591 Pilsbry, H. A.:
Mollusca of the southwestern states. Phila. acad pr (Mr 1905.
Among the species are numbers 2592-2598, and others.

2592 Ashmunella Levettei
2593 Ashmunella Chiricahuana
2594 Ashmunella metamorphosa
2595 Ashmunella Ferrissi
2596 Ashmunella angulata
2597 Ashmunella fissidens
2598 Ashmunella duplicidens

2599 Genus Acanthina
Under this are now placed the species of Monoceros.
2600 Adeomelon Stearnsii Dall.
2601 Æsopus myrmecoon Dall.
2602 Alabina Californica Dall & Bartsch.
2603 Alabina cerithoidea Dall.
2604 Alabina tenuisculpta Cpr.
2605 Variety **diegensis** Bartsch.

2606 Genus Amalthea
Synonymy:—Hipponyx of former lists.
2607 Amicula pallasii Midd.
Shell nearly concealed by the hairy mantle, which is almost circular, and which covers the back of the animal except for 8 small holes; this mantle or girdle bears unequal bunches of reddish hairs; length 67 mm. Northern waters. The "Concealed Chiton."
2608 Ampullina purpurea Dall.
Point Barrow, Alaska, etc. Shell about 2 inches long, purplish, with patches of white enamel near aperture; periostracum olive with darker streaks.
2609 Ancylus (Lanx) altus
Synonym of A. patelloides Lea.
2610 Ancylus Newberryi
Synonym of A. patelloides Lea.
2611 Anisodoris nobilis
Montereina nobilis MacFarland.
2612 Arca reticulata Gmel.
San Pedro, Cal., southward, as also the next.
2613 Arca mutabilis Sby.
2614 Archidoris Montereyensis (See 266).
2615 Asthenotherus villosior Cpr.
2616 Astrea undosa
Better known as Pomaulax undosus.

2617 Astrea inæqualis
Synonymy:—Pachypoma inæquale Mart.
2618 Axinopsis viridis Dall.
Japan.—Bering Sea.—Catalina Island, Cal., in muddy or sandy bottoms; shell about 6 mm. across, with a polished pale green periostracum.
2619 Axinopsis sericatus Cpr.
Alaska to California.
2620 Genus Bathytoma
This seems to be the latest name for the shells named previously under Pleurotoma (Genota), which see for list of species.
2621 Bathytoma Keepi Arnold.
Coalinga, Cal. (fossil).
2622 Bittium acicula Stimp.
2623 Bittium armillatum ornatissimum Bartsch.
2624 Bittium esuriens
2625 Bittium fortior Cpr.
2626 Bittium munitum munitoides Bartsch.
2627 Bittium Oldroydii Bartsch.
The above are some of the minute Californian shells, described mainly in recent years.
2628 Boreotrophon gracilis Perry.
Trophon multicostatus is called a synonym by some authorities.
2629 Bulla Gouldiana
Better known as nebulosa, which see (No. 94).
2630 Bythinella nuclea Lea.
2631 Cadulus quadrifissus Cpr.
Shell ½ inch long, the small end cut by a little cross composed of 4 slits. Dredged off San Pedro, Cal. (H. N. Lowe).
2632 Cadulus Hepburni Dall.
Shell polished, white, nearly straight, 11 mm. long. Victoria, B. C.
2633 Cadulus Tolmiei Dall.
Also from near Victoria, B. C., more curved than the last, rapidly tapering at the end.
2634 Cæcum magnum Stearns.
2635 Cæcum Cooperi (See No. 211).
2636—Callistochiton palmulatus Cpr.
Valves small, high, arched, with raised sculpture, 11 ribs on anterior valve, 7 very strong ones on posterior one, bifurcated behind; color dark brown; length 11 mm. Monterey to Santa Barbara, Cal.
2637 Variety **mirabilis** Pilsbry.
The last valve enormously thickened; interior bluish white. San Diego, Cal.
2638 Calyptræa mamillaris
Synonymy:—Galerus mammillaris Brod.
Puget Sound to Ecuador. The "Chinese Hat shell;" shell white, of a low conical shape, running up to a point, while inside there is a twisted deck, thin and sharp, reaching nearly to margin; diam. 25 mm. or commonly less. Not common on the Californian coast.
2639 Cardium biangulatum Sby.
Santa Barbara Islands, Cal., to Panama. Shell heavy, 40 mm. high, with strong ribs, interior reddish.
2640 Cardium Californiense comoxense
Described by Dall from the boulder clay of Vancouver Island; ribs flattened, defined only by interstitial lines.
2641 Cardium pseudofossile Reeve.

Synonym of C: californiense.

2642 Cardium ciliatum O. Fabr.

Puget Sound, north thru the Arctic, south to Cape Cod, on the Atlantic coast. Shell small, bearded; variable—many forms named.

2643 Cavolinia tridentata Forsk

Sea butterfly; shell shaped like a small button, with 3 small projections or points at one end, of which the middle one is longest; thin, hollow, horn-colored. These live near the surface of the ocean, and this species has been washed ashore in southern Cal.

2644 Cerithidea Californica

Formerly called sacrata—which see.

2645 Cerithiopsis connexa Cpr.

2646 Cerithiopsis metaxæ Cp.

2647 Cerithiopsis Stephansi Bartsch.

2648 Cerithiopsis purpurea Cpr.

Nodules on the shell fine; stained with purple; common at Pacific Grove, Cal. (Berry).

3649 Chrysodomus dirus Reeve.

Synonymy:—Euthria dira (see No. 799).

Sitka, Alaska.—Monterey, Cal.

2650 Columbella aurantiaca Dall.

Shell 5 mm. long, translucent, orange to brown, sometimes with zigzag brown markings. Monterey, Cal., among rocks, at low tide mark.

2651 Cooperella subdiaphana Cpr.

Shell thin, glistening white, quite swollen; hinge-teeth central, the strong ligament situated almost between the prominent beaks; about 12 mm. long. Southern Cal.

2652 Crassatella fluctuata Cpr.

2653 Crenella affinis Dall.

2654 Cuspidaria striata Jeff.

2655 Cyclichna alba Brown.

White cup-shell; 10 mm. long, cylindric, tapering toward each end; occurs on the Atlantic coast and in Southern California according to Keep.

2656 Cythara densistriosa Cpr.

2657 Cythara fusconotata Cpr.

2658 Bartsch, Paul:

Notes on the genus Sonorella, with descriptions of new species. Smith Misc Coll 47:187-200, t 28-33. Notes on Nos. 2659-2670; also describes Fisheri, Baileyi and variety Orcutti, Dalli and Ashmuni.

2659 Sonorella Indioensis

Based on Helix Carpenteri var. Indioensis Yates.

2660 Sonorella coloradoensis

Based on Helix coloradoensis Stearns. Questions the localities in Inyo and San Diego counties, Cal.

2661 Sonorella Hachitana

Based on Epiphragmophora hachitana Dall (in part).

2662 Sonorella Nelsoni

Type locality:—Lake Santa Maria, Chihuahua, Mexico.

2663 Sonorella Goldmani

Type locality:—same as last.

2664 Sonorella Merrilli

Type locality:—below San Quintin, Baja Cal.

2665 Sonorella Mearnsi

Type locality: San Jose Mts., Sonora, Mexico.

2666 Sonorella Magdalenensis

Based on Helix Magdalenensis Stearns.

2667 Sonorella Lohrii
Based on Helix Lohrii Gabb.
2668 Variety lioderma Pilsbry.
Near Moleje, Baja Cal. (Nautilus 18:59).
2669 Sonorella Arizonensis
Based on Helix Arizonensis Dall.

2670 Sonorella Rowelli
Based on Helix Rowelli Newc.
It seems to the writer that many of the "species" of Sonorella are ill-advised; most of them, if we understand correctly, are based on dead specimens, like Indioensis, which with Walcottiana seem indistinguishable from each other, and are from adjacent localities. My specimens of Coloradoensis seem later to have been identified as Fisheri,and still later described as Baileyi var.Orcutti. Descriptions are practically valueless to distinguish these forms, and large series of good specimens will probably show nearer relationship between them than authors cited seem to think.

2671 Dall, W. H.
A revision of the Solenomyacidæ. Nautilus 22:1-2.

2672 Solemya panamensis Dall.
Santa Barbara, Cal., to Panama.
2673 Solemya valvulus Cpr.
San Pedro, Cal., to Gulf of Cal.
2674 Solemya Agassizii Dall.
Tillamook bay, Oregon, to Azuja Point, Peru, in 1036-1800 fathoms.
2675 Solemya ventricosa Conr.
Oregon (Miocene). S: protexta Conr. perhaps the young.
2676 Terebratula (Liothyris) sakhalinensis
Dall, Nautilus 22:28. Okhotsk Sea, 64-100 fms.
2677 Laqueus Morsei
Dall, Nautilus 22:29 Japan Sea.

2678 Trask, Dr. John B.
Dr. R. E. C. Stearns, Science 21 Ag 1908, gave a sketch of this pioneer in West America. Helix Traskii and others commemorate his labors.

2679 Valvata humeralis californica
Pilsbry, Nautilus 22:82. Shell much more depressed, last whorl descending less; whorls convex below the suture, not flattened as is the typical form. Alt. 2.7, diam. 4 mm. Bear Lake, San Bernardino Mts., Cal. (S. S. Berry). Hannibal, Nautilus 23: 105 treats this as typical, and gives the range of the species from Wash.; Idaho; Utah; Ore.; Cal.; Mexico; N. M.
2680 Epitonium (Acrilla) Atwoodi
Dall, Nautilus 22:80. Miocene strata, Alaska.

2681 Ammonitella Yatesi præcursor
Edson, Nautilus 24:132 gives the synonymy as follows:—Planorbis lunatus Conr.—Gonostoma Yatesi Cp.—Ammonitella lunata.
Type locality:—Bridge creek, Oregon (fossil).
2682 Buell, Ira M.:
Notes on fossil Californian Pleurotomidæ, Nautilus 24:142.
2683 Pholadomya Pacifica
Dall, Nautilus 22:116. N. W. Pacific, in 107 fms.

2684 Cypræa Annettæ
Dall, Nautilus 22:125, the C: Sowerbyi of the Gulf of Cal.—name preoccupied.
2685 Trivia Californiana Gray 1828.
Erroneously given in literature as Californica fide Dall.
2686 Bifidaria bilamellata
Sterki & Clapp, Nautilus 22:126; in drift about 8 miles east of Quartzsite, Yuma Co., Arizona.
2687 Lymnæa hendersoni
Frank C. Baker, Nautilus 22:140. West of Ft. Collins, Colo.
2688 Sphærium Pilsbryanum
Sterki, Nautilus 22:141. Fossil, on shore of Bear Lake, Utah.
2689 Carinfex santæclaræ
Hannibal, Nautilus 23:40. Santa Cruz Mts., Cal. (Pliocene).
2690 Pisidium Marci
Sterki, Nautilus 23:42. Mt. Leidy, Utah, 10,000 ft. in a stagnant pond (Marcus H. Dall).
2691 Valvata Calli
Hannibal, Nautilus 23:107. Upper Lahontan Querternary, near Summer Lake, Oregon (F. M. Anderson); also Central Nevada. Named in honor of Robert Ellsworth Call.
2692 Valvata Whitei
Hannibal, l. c., same type locality. Named in honor of Dr. C. A. White.
2693 Valvata Utahensis Call.
2694 Bathytoma Tremperiana
Dall, Nautilus 24:109, named in honor of Dr. Tremper.
Shell averages about 62 mm. long, proportionately much heavier than B: Carpenteriana, and fasciole more strongly constricted, the appressed margin of whorl does not approach as closely to the periphery of preceding whorl; periphery often marked by a minutely beaded or undulate thread, and more nearly midway between sutures on the spire; aperture shorter than spire; aperture 32.1, spire 32.2, spire 32.2, diam. 20.7 mm. Dall suggests the differences may be sexual between this and Carpenteriana.
Santa Cruz, Cal., to Cerros Island, in 29-822 fms.
2695 Bathytoma Carpenteriana
Dall gives the measurements of this as 90-111 mm. long, aperture 34.6, spire 29.4, diam. 22.6 mm., and considers B: Tryoniana as merely a var. Tomales bay, Cal., to Cerros Island, Baja Cal.

2696 Modiolus Diegensis
"Shell small, zoned with dark blue, umbones usually white, covered with an olivaceous brown periostracum; anterior end very short, rounded, with 2 or 3 radial grooves externally; umbones moderately prominent; dorsal profile ascending, nearly straight, subangulate behind, the margin carried with a broad sweep to the base, where it meets the posterior end of an obscure ridge radiating from the umbones, in front of which the valves are more or less constricted, and, on the base, flattened, giving a slightly arcuate aspect to the shell; valves with a very slight rather anterior gape; interior polished, dark blue, much as in Mytilus edulis, the ligament long, the anterior margin with 3 or 4 crenulations corresponding to the external radial grooves. Length 19, max. height 6.5, diam. 4.5, umbones behind the anterior end of shell 1 mm."—Dall, Nautilus 24:110.
Type locality:—San Diego, Cal. (Gripp). May possibly be referrable to the genus Myrina.
2697 Mitra Belcheri Swainson.
Magdalena bay, Baja Cal.

2698 Pachypoma inæquale spiratum
Dall, l. c. III. Gulf of California.
2699 Tegula regina (See No. 1605).
2700 Mitra lens
Scammons Lagoon, Baja Cal.
2701 Melina Chemnitziana
Coronado Islands, Baja Cal.
2702 Pteria sterna
San Diego breakwater, Cal.
2703 Rangia Le Contei Conr.
Flowing Wells, Colorado Desert, Cal. (Mrs. Stephens).
2704 Lucina edentuloides Verrill.
Off San Clemente Island, Cal., in 40 fms. (Dr. Fred Baker).
2705 Odostomia (Amaura) talpa Dall & Bartsch.
British Columbia (Hanham, Nautilus 24:114).
2706 Williamia vernalis
San Nicolas Island, Cal. (H. N. Lowe).
3407 Ovula Vidleri Sby. 1881.
2708 Haliotis Cracherodii Holzneri
Terminal Island, near San Pedro, Cal.—Baja Cal. (Hemphill).
2709 Ianthina globosa Swainson.
Berry, Nautilus 22:37, Oceanside, San Diego, Cal.
2710 Ianthina communis
With last, doubtfully referred to this sp. by Berry.
2711 Ianthina exigua Lam.
Point Pinus, and Oceanside, Cal. (see Berry, l. c.).
2712 Mitramorpha filosa intermedia
Berry, l. c. 38, Pacific Grove, Cal.—Santa Barbara, Cal. (Pleistocene).
2713 Turbonilla Gabbiana
Synonymy (fide Berry, l. c. 39):—Chemnitzia Gabbiana Cp.—Turbonilla gracillima Gabb.—Turbonilla montereyensis Dall & Bartsch.
2714 Nassa perpinguis bifasciata
Two broad spiral bands of chestnut in abrupt contrast with the grayish-buff ground color. San Pedro, Cal. (Berry, l. c.).
3715—Seila assimilata C. B. Ad.
Tropical.—The Californian shell referred to this is No. 565.
2716 Rissoa purpurea
Berry, l. c. 40 refers to Rissoa No. 395.
2717 Bifidaria (Chaenaxis) tuba intuscostata
Clapp, Nautilus 22:76. Yuma Co., Arizona.
2718 Ashmunella Kochii
Clapp, l. c. 77, Donna Ana Co., N. M.
2719 Berry, S. S.:
The known mollusca of San Bernardino Co., Cal. Nautilus 23:73.
2720 Zonitoides milium
Greenhouse in Redlands, Cal. (Berry).
2721—Lymnæa humilis modicella
Redlands, Cal. (Berry).
2722 Lymnæa bulimoides Lea.
Mojave river, Cal. (Berry).
2723 Pisidium Ashmuni
Bluff Lake, San Bernardino Co., Cal. (Berry).
2724 Epiphragmophora exorata rubicunda
Rowell, Nautilus 16:52. Sonoma Co., Cal.
2725 Vanatta, E. G.:
List of land shells collected in the Sacramento Mts., N. M. Nautilus 16:57.

2726 Dentalium Carpenterianum
2727 Dentalium megathyris
2728 Diaphana Californica
2729 Diplodonta aleutica
Pribilof to Shumagin Islands. Attains a length of 25 mm.
2730 Leptothyra paucicostata rubra
2731 Limnæa Atkana
Keep, West coast shells—error for Litorina Atkana?

2732 Mangilia Painei
2734 Mitra dolorosa
2735 Miralda Californica
2736 Odostomia Oldroydi
2737 Odostomia inflexa
2738 Patula Chiricahuana Ashmuni
2739 Pecten Whiteavesi
2740 Scala Sawinæ
2741 Siphonaria vernalis

2742 Solariella unda
Descriptions of Nos. 2726-2742 by Dall have not been seen—all are West American.

2743 Zonites Lansingii
Shell imperforate, orbicular-depressed, shining, dark horn-color, smooth above, at base substriate; suture impressed; whorls 5½, rather convex, the last not descending, obsoletely angular at the periphery, more convex at base, excavated around the umbilical region; aperture narrow, lunate; peristome acute, the right margin thickened within by an obsoletely denticulated lamella, columellar margin scarcely reflected. Greater diam. scarcely 3, lesser 2.5, height 1.75 mm.—Bland.
In damp moist places, among leaves, Astoria, Oregon.—Vancouver Island.

2744 Zonites Stearnsii
Larger, more elevated and more distinctly striated, whorls 7, with rather wider and more rounded aperture, but without the lamella within the outer margin of peristome. Greater diam. 4, lesser 3.5, height 2.5 mm.—Bland.
Alaska (Dall).—Olympia, Wash.—Astoria and Portland, Ore.

2745 Zonites Shepardi
Described by Henry Hemphill, description not seen.
2746 Pyramidella Adamsi Cpr.
Synonymy:—P: conica variegata.—Obeliscus conicus jun. Cpr.—O: variegatus Cpr.
Type locality:—Mazatlan.
The specimens from California, referred to this in the past, are probably all of other species.
2748 Littorina pullata Cpr. 1864.
San Pedro, Cal.—Mexico. Resembles L: scutulata, of a dark reddish-brown, sometimes checked, with numerous fine spiral lines of sculpture.
2749 Lucapinella callomarginata Cpr.
San Pedro, Cal.—south.
2750 Lyonsia inflata Conr.
2751 Lyonsia nitida Conr.
2752 Margarita lirulata subelevata Cpr.
2753 Margarita pupilla salmonea Cpr.

2754 Menetus opercularis Gld.

See Planorbis.

2755 Modiolus demissus Dillwyn.

2756 Parthenia quinquecincta Cpr.

2757 Ischnochiton regularis Cpr.

Shell 35 mm. long, half that in width, ends both semicircular; valves sharply arched, marked with fine sculpturing; outside olive, inside light blue.

2758 Ischnochiton magdalensis Hds.

2759 Ischnochiton Mertensii Midd.

Shell oval, elevated, with angular dorsal ridges and straight slope on sides; color from orange to dark red-brown, sometimes blotched with white; valves richly sculptured; 30 mm. or more long. Sitka to Monterey, Cal.

2760 Lepidopleurus nexus Cpr.

2761 Lepidopleurus Oldroydi Bartsch.

2762 Liostraca varians Sby.

2763 Liotia acuticostata Cpr.

2764 Littorina grandis Midd.

2765 Discinisca strigata Brod.

2766 Donax laevigata Desh.

Formerly well known as Donax Californicus—a name now used for a very different shell.

2767 Epitonium

Formerly called Scalaria, later named Scala. The species bellastriatum, borealis, crebriscostatum, hindsii, indianorum, etc., may be looked for under either of the three generic names in the literature extant.

2768 Erato mangeriæ Mke.

2769 Eulima Randolphi Van.

2770 Eulima solitaria C. B. Ad.

2771 Gibbula optabilis Cpr.

2772 Helicella ventricosa Drap.

2773 Dall, W. H. and Paul Bartsch:

A monograph of West American Pyramidellid mollusks. U S. Nat'l Mus b. 68. 1909.

This exhaustive contribution of 247 pages, and 30 plates, describes an immense number of mostly minute shells of our fauna. We shall venture to give nothing more here than name and type locality of the species credited to California. See Nos. 2774-2882.

Genus **Pyramidella** Lamarck

2774 P: Mexicana. Scammon Lagoon, Baja Cal.

2775 P: Mazatlanica. Cape Tepoca, Mexico.

2776 P: achates. "Santa Barbara, Cal."—Mazatlan.

Genus **Turbonilla** Risso.

2777 T: Diegensis. San Diego.

2778 T: acra. Catalina Island.

2779 T: Gabbiana. Monterey.

2780 T: Æpynota. Off San Martin I., Baja Cal.

2781 T: Santarosana. Santa Rosa I.

2782 T: Kelseyi. San Diego.

2783 T: Raymondi. Catalina Isl.

2784 T: Carpenteri. San Pedro.

2785 T: asser. Redondo.

2786 T: attrita. San Pedro.

2787 T: Lowei. San Pedro.

2788 T: profundicola. La Jolla.

2789 T: Galianoi. Cape San Lucas, Baja Cal.

2790 T: humerosa. Catalina I.

2791 T: vexativa. San Pedro.

2792 T: **Ridgwayi.** San Diego.
2793 T: **Halibrecta.** Catalina I.
2794 T: **Gouldi.** San Pedro.
2795 T: **Pedroana.** San Pedro.
2796 T: **Halia.** San Diego.
2797 T: **Painei.** Redondo.
2798 T: **Keepi.** Long Beach.
2799 T: **halistrepta.** Newport.
2800 T: **obesa.** Pacific Beach.
2801 T: **Nuttingi.** San Diego.
2802 T: **callia.** San Diego.
2803 T: **pluto.** San Pedro.
2804 T: **signæ.** San Pedro.
2805 T: **aragoni.** Monterey.
2806 T: **recta.** Point Abreojos, Baja Cal.
2807 T: **weldi.** Point Fermin.
2808 T: **nereia.** San Diego.
2809 T: **antestriata.** Esteros bay.
2810 T: **antemunda.** Santa Rosa Isl.
2811 T: **virgo.** Santa Barbara.
2812 T: **almo.** San Diego.
2813 T: **wickhami.** Catalina I.
2814 T: **adusta.** San Diego.
2815 T: **regina.** Santa Rosa I.
2816 T: **catalinensis.** Catalina I.
2817 T: **ambusta.** San Pedro.
2818 T: **pentalopha.** San Diego.
2819 T: **heterolopha.** San Diego.
2820 T: **periscelida.** Santa Rosa I.
2821 T: **laminata.** San Pedro.
2822 T: **arata.** Catalina I.
2823 T: **Swani.** San Pedro.

2824 **Genus Odostomia Fleming.**

Shell with sinistral apex, usually short, few whorls, subconic or ovate, with a single columellar fold which varies in strength and sometimes is not apparent at aperture. Sculpture varies from smooth to lamellar axial ribs and spiral keels. Forty subgenera recognized—19 represented in West America.

2825 O: **laxa.** Scammon Lagoon, Baja Cal.
2826 O: **Richi.** San Pedro.
2827 O: **callimorpha.** San Pedro.
Synonymy:—Chrysallida pumila Cpr.
2828 O: **Ritteri.** Catalina I.
2829 O: **Eugena.** San Hipolito Point, Baja Cal.
2830 O: **trachis.** San Pedro.
2831 O: **lucca.** San Diego.
2832 O: **Clementina.** San Clemente I.
2833 O: **Oldroydi.** San Diego.
2834 O: **cincta.** Santa Barbara.
2835 O: **vicola.** San Pedro.
2836 O: **pulcia.** San Pedro.
2837 O: **virginalis.** Todos Santos bay, Baja Cal.
Synonymy:—Evalea gracilienta Keep.
2838 O: **promeces.** Todos Santos bay, Baja Cal.
2839 O: **pulcherrima.** Terminal Island.
2840 O: **vincta.** San Pedro.
2841 O: **sanctorum.** Todos Santos bay, Baja Cal.
2842 O: **sapia.** San Diego.
2843 O: **Pedroana.** San Pedro.

2844 O: **Hemphilli.** San Hippolito Point, Baja Cal.
2845 O: **Æpynota.** San Pedro.
2846 O: **turricula.** San Pedro.
O: terricula (No. 2561) is a misprint.
2847 O: **Americana.** San Pedro
2848 O: **Eucosmia.** Point Abreojos, Baja Cal.
2849 O: **amilda.** San Diego.
2850 O: **farma.** Catalina I.
2851 O: **enora.** San Pedro.
2852 O: **fetella.** San Diego.
2853 O: **esilda.** San Diego.
2854 O: **herilda.** San Diego.
2855 O: **nemo.** San Diego.
2856 O: **Io.** Santa Rosa I.
2857 O: **patroma.** Santa Rosa I.
2858 O: **obesa.** San Pedro.
2859 O: **phanella.** San Pedro Sby.
2860 O: **Santa Rosana.** Santa Rosa I.
2861 O: **donilla.** San Pedro.
2862 O: **Californica.** Ocean Beach, San Diego.
2863 O: **serilla.** San Diego.
2864 O: **minutissima.** San Diego.
2865 O: **Raymondi.** Catalina I.
2866 O: **gravida.** Santa Barbara.
2867 O: **notilla.** Catalina I.
2868 O: **movilla.** San Diego.
2869 O: **altina.** San Diego.
2870 O: **profundicola.** San Diego.
2871 O: **resina.** Arch Beach.
2872 O: **deliciosa.** Monterey.
2873 O: **lastra.** Cal.
2874 O: **Farallonensis.** Farallones Islands.
2875 O: **orcia.** Santa Rosa I.
2876 O: **avellana.** Neah bay, Wash.
2877 O: **moratora.** Point Reyes.
2878 O: **nota.** San Diego.
2879 O: **subturrita.** San Pedro.
2880 O: **farella.** Long Beach.
2881 O: **dinella.** Redondo.

2882 O: **Coronadoensis.** Coronado Beach.

2883 Genus **Pristiloma** Ancey.

Synonymy:—Pristina Ancey, and Anceyia Pilsbry (names preoccupied).

Species:—Zonites lansingi and stearnsi Bland (Microphysa Binney).

2884 **Zonites selenitoides** Pilsbry.

This species is similar in form and general appearance to Z. minusculus Binn., tho decidedly larger. Umbilicus broad. Shell thin, light yellowish-horn color, almost white. Surface shining, covered with close strong oblique rib-striæ, like Patula striatella; these striæ while generally regular, sometimes bifurcate, or separate to give room for another to be intercalated. Spire flatter than minusculus, nearly plane. The early 1¾ to 2 whorls smooth, polished, not striate; sutures well impressed. There are 3½ whorls in all, convex, gradually widening, the last proportionately wider than in minusculus. Aperture slightly oblique, lunate, narrower than in minusculus, its margins thin, acute, scarcely con-

verging, the columellar shortly subreflexed. Alt. 1.2, diam. 3 mm."—Pilsbry, Phila Acad pr 1889:412.

Type locality:—Mariposa Big Trees, Cal. (Hemphill).

See Zonitoides selenitoides.

2885 Mopalia heathii Pilsbry.

"Oblong, rather elevated, carinated, with nearly straight side slopes; surface smoothish to the naked eye, lusterless, and in color (1) olive-green with some lighter spots, or purplish maculation, or slight roseate suffusion, or (2) vivid red, with scattered blue spots. Valves shaped as in M. lignosa, but without a median anterior projection of the tegmentum; the intermediate valves very faintly radially trisulcate at the sides, the anterior 2 grooves defining the low, slight and inconspicuous diagonal rib, the lateral areas not raised; entire surface very finely and evenly granulate, the granules small, rather pointed, separated, intervals very minutely, radially wrinkle-granulate. Anterior valve with a few faint, shallow radial furrows. Posterior valve with semicircular posterior outline, the mucro in front of the middle of tegmentum, profile of the surface in front of it convex, that of the posterior slope decidedly concave. Interior deep rose color or slightly purplish; sutural laminæ and sinus about as in lignosa. Teeth rather long and somewhat roughened, as in lignosa. Valve i with 8 slits; ii-vii with 1-1; valve viii entirely "Ischnoid," with regular, crescentic insertion plate, cut by 7 or 8 slits, which are somewhat closer posteriorly; no sinus behind. Girdle leathery, nude except for solitary or 2 or 3 closely grouped long bristles at all or part of the sutures, 1 on each side of the head valve, and 2 behind the tail valve. Gills about 25 on each side, not extending quite to the anterior end of the foot. Length 25, width 12 mm. (dried specimen), or smaller."—Pilsbry, Phila. acad pr 1898:288.

Type locality:—Pacific Grove, Cal. (Heath).

2886 Nuttallina Thomasi Pilsbry.

Type locality:—Pacific Grove, Cal. (Thomas).

"General form oblong, rather depressed, not keeled dorsally; surface granulose when not eroded. Color blackish or dark brown, with a whitish band on each side of the median line of back, or irregular whitish maculation; girdle dark. Intermediate valves short and wide, with a slight or hardly noticeable depression on each side of the jugum, and others in front of and behind the scarcely defined, obsolete, diagonal convexity; the anterior and posterior margins subparallel, slightly arcuate. Anterior valve granulate, without radial ribs, the posterior margin excavated mesially. Posterior valve with tegmentum slightly wider than the anterior, the obtuse mucro somewhat behind the middle. Interior blue-green, with the area behind the valve-callus dark brown, or livid purplish, with light sutural laminæ and blue-green area behind the sinus. Slits in valve i, 9 or 10; valves ii to vii, 1-1; valve viii, 10 or 11. Teeth rather separated, those of valve i unequal, slightly rugose outside; posterior tooth of valves ii to vii small, very obliquely directed forward; teeth of valve viii very short, strongly directed forward and roughened. Sinus wide and square, spongy, the area behind it transversely grooved. Eaves rather wide, "spongy" or porous. Girdle sparsely covered with short, rigid, obtuse, glossy spines of a blackish-brown color, or occasionally some are whitish. Gills in type specimen, 26 on left, 23 on right side; not quite reaching the anterior end of the foot. In another there are 23 on left, 25 on right side. Length 15, breadth 8 mm. or smaller."—Pilsbry, l. c. 289.

2887 **Lepidopleurus rugatus** Cpr.
2888 **Lepidopleurus nexus** Cpr.
2889 **Ischnochiton regularis** Cpr.
2890 **Ischnochiton mertensii** Midd.

2891 **Ischnochiton sinudentatus** Cpr.
Perhaps a var. of I: decipiens?
2892 **Ischnochiton magdalenensis** Hinds.
2893 **Nuttallina Californica** Reeve.
2894 **Mopalia muscosa** Gould.
2895 Variety **Lignosa** Gould.
2896 Variety **Hindsii** Reeve.
Nos. 2887-2896 are recorded from Pacific Grove, Cal., by Pilsbry, l. c., 288. Several 7-valved specimens of Chitons are recorded.

2897 **Genus Vallonia** Risso, 1826.
Sterki, Phila acad pr 1893:234, gives an exhaustive study of this group of minute snails, which we will not attempt to review. The study of the soft parts seem to sustain the genus, while 25 species and var. are described. Ten or more are recorded in our region.

2898 **Genus Tethys Linne.**
Pilsbry, Phila acad pr 1895:346, shows that this name antedates Aplysia and Laplysia Linn.

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2899 **Pilsbry, H. A.** and E. G. Vanatta:
Revision of the N. A. slugs: Ariolimax and Aphallarion. Phila acad pr 1896:339. Describes Aphallarion as a new genus.

2900 **Genus Aphallarion Pilsbry and Vanatta.**
"External characters, jaw, radula and digestive tract, shell and general internal topography, as well as female genitalia, as in Ariolimax; penis (and its retractor) completely wanting, a small and short epiphallus lying in its place; right eye retractor passing to the left of genitalia."
Type:—A. Buttoni.

2901 **Pilsbry and Vanatta:**
Anatomical notes on certain West American Helices. P. & V. l. c. 1898:67.
Synopsis of the recent and tertiary Psammobiidæ of N. A. Phila acad pr 1898:57. Mentions the following species of West America.

2903 **Psammobia maximus** Deshayes.
Gulf of California to Panama.
2904 **Psammobia regularis** Cpr.
Gulf of California.
2905 **Psammobia Californicus** Conrad. 1848.
Sitka to San Diego, Cal.—Japan.
Synonymy:—P. rubroradiata Cpr. 1863.
2906 **Psammobia fucatus** Hinds.
Magdalena bay, Baja California.
2907 **Psammobia edentulus** Gabb.
San Pedro, Cal., in 60 fms.
The above all belong to the subgenus Gobræus of Leach.

2908 **Sanguinolaria tellinoides** A. Ad.
Gulf of Cal. to Panama.

2909 Sanguinolaria Hanleyi Bertin.
Baja Cal. to Panama.
2910 Sanguinolaria Nuttallii Conrad.
Southern Cal., Santo Domingo, Baja Cal. Japan. Type species.
2911 Tagelus violascens Cpr.
Gulf of Cal. to Nicaragua.
2912 Tagelus affinis C. B. Adams.
Santa Barbara, Cal., to Panama.
2913 Tagelus politus Cpr.
San Pedro, Cal. to Panama.
2914 Tagelus subteres Conrad.
San Diego, Cal. Santo Domingo, Baja Cal.
2915 Margarita sharpii
Pilsbry, l. c. 1898:486. Unalaska.

2916 Pristiloma Pilsbryi
"Shell imperforate, translucent, light horn colored, polished; suture deep; spire depressed, composed of 5½ slowly increasing whorls; first 2 whorls are smooth, others deeply radially sulcate, the sulci fading out at the periphery, making the top of the whorls flatly nodulose. About 52 nodules on last whorl. Base smooth, squarely convex, giving the shell the form of a thick rounded disc. Mouth narrowly lunate. Lip sharp, rather sinuous at base, with a slight callus near the columella as in P: Stearnsi; columellar lip slightly reflexed. Alt. 1:68; greatest diam. 2.56; least diam. 2.4 mm."—Vanatta, Phila acad pr 1899:120.
Type locality:—Portland, Oregon (Hemphill).

2917 Pristiloma Taylori
Pilsbry, l. c. 1899:185 t 9 f 6-8.
Type locality:—Nanaimo, Vancouver Island (G. W. Taylor).

2918 Pristiloma arctica
Pilsbry, l. c. 186, based on Hyalina arctica Lehnert. Point Barrow, Alaska.

2919 Ashmunella altissima
Pilsbry, l. c. 192, based on Polygyra altissima Ckll., Nautilus 12:76. Sierra Blanca, N. M., 11,092 ft. (Townsend).

2920 Eulima Lowei
"Shell small, smooth, shining, white, 1 or 2 median whorls pink tinted from the animal dried within, opaque, spire bending forward, the outline nearly straight in front, convex behind. In the face view the shell appears straight. Apex decollated and small. Suture impressed, slightly ascending toward the aperture. Ten whorls remaining, the last 4 each having an impressed varix near the right side. Whorls of spire a little convex, body whorl slightly and very obtusely angular at the periphery, rather flattened above and below this angulation, base sloping, slightly convex. Aperture trapezoidal-ovate, outer lip thickened, sharp, reversed sigmoid in profile, inner lip angular at the junction of the columella and parietal wall. Columella heavy, concave; parietal wall with a thin callus, convex. Alt. 6.85, diam. 2.66, length of aperture 2.09, breadth of aperture 1.33 mm."—Vanatta, Phila acad pr 1899:254.
Type locality:—Long Beach, Cal. (H. N. Lowe).

2921 Eulima Bistorta
"Shell small, smooth, shining, opaque, bluish white, apex yel-

low tinted, spire bending forward and toward the right, the outline nearly straight on the right side, convex on the left, front outline nearly straight, rear outline convex. Apex decollated, small. Suture impressed, slightly ascending toward the operture. About 9½ whorls remaining, of which each of the last 3 has an impressed varix, thickened behind, on the right side. Whorls of spire convex, the body whorl rather cylindrical and much bent to the right and forward, giving the penultimate whorl a swollen appearance. Aperture irregularly oval, outer lip sharp, thickened, bow shaped in profile, columella and parietal walls forming a concave arch, parietal callus nearly straight, thin. Alt. 5.9, diam. 2.16, length of aperture 1.9, breadth of aperture 1.2 mm."—Vanatta, l. c.

Type locality: Monterey, Cal., on a starfish.

2922 Eulima Randolphi

Vanatta, l. c. 256. Unalaska (P. B. Randolph).

2923 Vertigo Gouldii lagganensis

Pilsbry, l. c. 1899:314, Laggan, Alberta (Taylor).

2924 Vertigo Andrusiana

Pilsbry, l. c. 315, Douglas Co., Oregon (F. H. Andrus).

2925 Pilsbry, H. A.

Note on the anatomy of the helicoid genus Ashmunella, l. c. 1900:107.

Lower Californian species of Cœlocentrum and Berendti, l. c. 550.

Sonorella, a new genus of helices, l. c. 556. S: hachitana type.

—and Edward G. Vanatta: A partial revision of the Pupidæ of the U. S. l. c. 582.

2926 Bifidaria procera cristata

"Angle and parietal lamellæ more completely united than in B. procera, hardly bifid; crest behind the outer lip very strong. Length 2.8, diam. 1.2 mm."—Pilsbry & Vanatta.

Type locality:—Camp Verde, Arizona (Ashmun).

2927 Bifidaria riograndensis Sterki, ined.

Hidalgo, Texas—see P. & V. l. c.

2928 Vertigo concinnula Cockerell.

Colorado and New Mexico.

2929 Vertigo modesta

Alaska.—Laggan, Alberta (Taylor).—Labrador.

2930 Variety **Parietalis** Ancey. Utah.

2931 Variety **Corpulenta** Morse.

Type locality:—Little Valley, Washoe Co., Nevada.—Utah.

2932 Variety **Castanea** Sterki.

Fish Camp, Fresno Co., Cal. (Hemphill).—Lake Co., Cal. (Sterki).

2933 Vertigo Columbiana Sterki.

Vancouver Island (Taylor)—Wash.—Oregon.

2934 Variety **Utahensis** Sterki.

"Smaller, length 1.8, diam. 1 mm., and quite distinctly striate. Aperture about as in columbiana, but a little shorter. Box Elder Canyon, Utah (Hemphill). All the above described by P. & V. l. c.

2935 Vertigo coloradoensis basidens. Bland, N. M. (Ashmun).

2936 Variety **Arizonensis**

Type locality:—Top of Mt. Mingus, near Jerome, Arizona, about 8,500 feet elev. (Ashmun).

2937 Pristiloma Idahoensis
Pilsbry, l. c. 1902:93? Idaho.
2938 Cardita Grayi Dall. 1902.
Gulf of Cal.—Panama.—Galapagos Islands.
2939 Cardita laticostata Sby. 1832 (not Push. 1837).
Guaymas, Son.—Panama.—Guayaquil.
2940 Cardita affinis Sby. 1932.
Margarita bay, Baja Cal.—Gulf of Cal.—Panama.
2941 Cardita sulcosa Dall. Panama.
2942 Venericardia crassicostata Sby. 1825.
Gulf of Cal.—Galapagos Islands.

2943 V: (ventricosa var?) Gouldii Dall.
Type locality:—off San Diego, Cal., in 822 fms.
"Shell ovate, subcompressed, with 23 ribs, sculpture similar to that of V. ventricosa but feebler, with concentric ridges only in front of the low beaks, and the color paler, the lunule much smaller, and the lunular cardinals thin and feeble."—Dall, Phila acad pr 1902:709.

2944 Venericardia Stearnsi Dall.
Type locality:—Puget Sound, with V. ventricosa.
"Shell short, plump, strong, with very high prosogyrate beaks and about 19 strong, rudely nodulous radial ribs with narrower interspaces and a dark-brown pilose periostracum."—Dall, l. c.

2945 Venericardia monilicosta Gabb? 1861.
Pleistocene, Santa Barbara, Cal. (Jewett).

2946 Venericardia incisa Dall, 1902.
Aleutian region.

2946 Venericardia Alaskana Dall.
Arctic ocean.—Bering Sea.—Japan. This species is that which from the Pacific has usually been named V. borealis Conrad —a species not known to occur within several thousand miles of the habitat named, according to Dall.

2947 Venericardia rudis Gray.
Aleutian Islands.

2948 Venricardia prolongatus Cpr.
A small, elevated shell, of pale gray color, and very much the sculpture of V: incisa; beaks prominent, form oblique. Middleton Island, Alaska, to Neeah bay.

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2949 Dall, W. H.
Synopsis of the Carditacea and of the American species. Phila acad pr 1902:696-716. Above notes are taken from this paper.

2950 Cockerell, T. D. A.:
Variation in the snail-genus Ashmunella. Phila acad pr 1903: 615.

2951 Genus Zacoleus Pilsbry.
"Ariolimachinæ with the penis a simple sac continued beyond the insertion of the vas deferens; duct of the spermatheca enormously enlarged; marginal teeth with very long zonitoid mesocones, no ectocones; intestine but slightly twisted; sole tripartite; pneumostome behind the posterior 3d of the mantle; no caudal

pore. Central nervous system peculiar by the unusually long cerebral commissure and very short cerebro-visceral and cerebro-pedal connectives."—Pilsbry.

2952 Zacoleus Idahoensis Pilsbry.
Pilsbry, Phila acad pr 1903:626. Meadows, Idaho (E. H. Ashmun).

2953 Holospira Ferrissi
Pilsbry, l. c. 1905:216. Huachuca Mts., Arizona (Ferriss).
2954 Pilsbry, H. A.:
Mollusca of the southwestern states. l. c. 211-290. An important contribution on the genera Holospira, Ashmunella, Sonorella and Oreohelix. The following are described.

2955 Genus Oreohelix Pilsbry.
Pilsbry, Phila acad pr 1905:268. Based on species of Helix, Patula and Pyramidula of various authors. Type Helix strigosa.

2956 Oreohelix strigosa
2957 Variety **concentrata.** Arizona.
Based on Patula strigosa var. concentrata Dall.
2958 Variety **Huachucana.** Arizona.
2959 Variety **Socorroensis.** New Mexico.
2960 Oreohelix barbata
Cave Creek canyon, Chiricahua Mts., Arizona. (J. H. Ferriss).
2961 Oreohelix Yavapai
Near Jerome, Arizona.
2962 Variety **Neomexicana.** N. M.
2963 Oreohelix Chiricahuana
Chiricahua Mts., Arizona (Ferriss).
2964 Sonorella virilis
2965 Variety **circumstriata**
2966 Variety **Huachucana**
2967 S: Hachitana Ashmuni
Based on Sonorella Ashmuni Bartsch.
2968 Variey **Bowiensis.** Bowie, Arizona.
2969 Variety **Rowelli. (Helix Rowelli Newc.)**
2970 S: Granulatissima parva. Arizona.
2971 Variety **Latior**
2972 Ashmunella angulata. Chiricahua Mts., Arizona.
2973 Ashmunella Chiricahuana. Chiricahua Mts.
2974 Variety **Mogollonensis.** N. M.
2975 Ashmunella metamorphosa. Chiricahua Mts.
2976 Ashmunella Ashmuni robusta
2977 A: Thomsoniana pecosensis
2978 A: Levettei angigyra. Huachuca Mts., Arizona.
2979 Variety **Heterodonta.** Huachuca Mts., Arizona.
2980 Variety **Proxima.** Chiricahua Mts., Arizona.
2981 Ashmunella Mearnsi. N. M.
2982 Ashmunella esuritor. Chiricahua Mts., Arizona.

2983 Bartsch, Paul:
The recent and fossil mollusks of the genus Cerithiopsis from the west coast of America. U. S. natl mus pr 40:3271367 t 36-41.
The recent and fossil mollusks of the genus Bittium from the west coast of America. l. c. 383-414, t 51-58.
The following notes are taken from the above papers.
2984 Cerithiopsis (Cerithiopsis) fatua
Type locality:—Lower Pleistocene, Deadman's Island, Cal.

2985 Cerithiopsis (Cerithiopsis) oxys

Type locality:—Point Abreojos, Baja Cal.—San Pedro bay, Cal.

"Shell minute, elongate-conic, dark brown. Nuclear whorls almost 4, forming a slender, elongate-conic spire, having the whorls well rounded. Post-nuclear whorls well rounded, separated by a strongly channeled suture, marked by 3 equally strong, spiral cords, the first of which is at the summit, the 3d slightly above the periphery, while the 2d is median between these two. In addition to the spiral cords, the whorls are marked by vertical, axial ribs, almost as strong as the spiral cords. Of these ribs, 16 occur upon the first, 20 upon the 2d, 18 upon the 3d to 5th, and 24 upon the penultimate turn. The junctions of the axial ribs and spiral cords form strong tubercles of which those of the posterior cord are rounded while the other 2 are truncated posteriorly and slope gently anteriorly, while the spaces inclosed between the spiral cords and axial ribs are strongly impressed, rounded pits. Periphery of the last whorl marked by a strong cord which is feebly nodulose and separated from the tuberculate keel posterior to it by a channel as wide as those occurring on the spire; this channel is marked by the continuations of the axial ribs. Base moderately long, marked by a strong, spiral cord about halfway between the peripheral cord and the insertion of the columella, the spaces which separate it from the peripheral cord on one side and from the columella on the other, appearing as deep, rounded channels. Aperture rather small, irregularly ovate, very strongly channeled anteriorly; posterior angle obtuse; outer lip rendered sinuous by the external sculpture; columella very stout, twisted revolute, and reflected; parietal wall glazed with a thin callus."

2986 Cerithiopsis (Cerithiopsis) cerea Cpr.

Type locality:—Mazatlan, Mexico, on Spondylus, as also the next.

2987 Cerithiopsis (Cerithiopsis) sorex Cpr.

2988 C. (Cerithiopsis) pupiformis Cpr. Mazatlan.

2989 C. (Cerithiopsis) abreojoensis

Type locality:—Point Abreojos, Baja California.

2990 Cerithiopsis (Cerithiopsis) Berryi

"Shell small, elongate-conic, brown. Nuclear whorls 4, well rounded, separated by constricted sutures, smooth, forming a mucronate apex to the shell. Post-nuclear whorls strongly sculptured, having 3 spiral cords between the sutures, of which the one at the summit is much smaller than the rest on the early whorls; the other 2 are subequal in strength, the 2d one being close to the one at the summit, while the 3d is almost halfway between the 2d and the suture. On the last whorl, the cord at the summit is almost equal to the other two. In addition to the spiral sculpture, the whorls are marked by vertical axial ribs which are stronger than the spiral cords. Of these ribs, 12 occur upon the 2d, 16 upon the 3d to 5th, 18 upon the 6th, and 20 upon the penultimate turn. The junctions of the axial ribs and spiral cords form strong tubercles, which are truncated posteriorly and slope gently anteriorly. The spaces inclosed between them are elongated, narrow pits between the 1st and 2d spiral cords on the early whorls, while on the last they are squarish pits in this region. The spaces between the median and supraperipheral cord are strongly impressed, large, squarish pits on all the whorls. Sutures strongly

channeled. Periphery of the last whorl marked by a broad sulcus, equalling that which separates the supraperipheral from the median cord, crossed by the continuations of the axial ribs. Base marked by a strong, broad, rounded cord immediately below the periphery and a 2d less strong on its middle, while a slender thread encircles the insertion of the columella. In addition to this sculpture, the base is marked by strong, incremental lines. Aperture irregularly oval, decidedly channeled anteriorly; posterior angle obtuse; outer lip thin, showing the external sculpture within, rendered sinuous at the edge by the external sculptur; columella stout, curved, strongly twisted, with the edge reflected; parietal wall glazed with a thick callus."

Type locality:—off Del Monte, Monterey, Cal., in 12 fms. (S. S. Berry).

Also known from San Pedro bay, Cal.

2991 Cerithiopsis (Cerithiopsis) cesta

Type locality:—San Diego, Cal.

2992 C. (C.) Stejnegeri

Type locality:—Bering Island.

2993 Variety **dina.** Sitka, Alaska.

2994 C. (C.) halia

Type locality:—Todos Santos bay, Baja Cal.

2995 C. (C.) aurea

2996 C. necropolitana

Lower San Pedro series, Deadmans Island, Cal.

2997 C. diegensis

Type locality:—San Diego, Cal.

2998 Cerithiopsis (Cerithiopsida) Rowelli

Probably Californian.

2999 Cerithiopsis (Cerithiopsidella) antefilosa

Type locality:—off Point Loma, Cal.—San Pedro bay, Cal.

3000 Cerithiopsis (C.) alcima

Type locality:—Whites Point, San Pedro, Cal.

3001 Cerithiopsis excelsa

Oregonian Eocene of North Fork of Umpqua river.

2003 Cerithiopsis fossilis

Lower San Pedro series, Deadmans Island, Cal.

3003 Cerithiopsis gloriosa

California.

3004 Cerithiopsis columna Cpr.

Type locality:—Neah bay, Washington (J. G. Swan).—Monterey, Cal.

3005 Cerithiopsis paramœa

Type locality:—Neah bay, Washington.

3006 Cerithiopsis Arnoldi

Type locality:—San Pedro bay, Cal. (Ralph Arnold).

3007 Cerithiopsis antemunda

Type locality:—San Pedro bay, Cal.—San Diego, Cal.

3008 Cerithiopsis diomedeæ

Type locality:—San Diego, Cal.

3009 Cerithiopsis Williamsoni

Synonymy:—Bittium williamsoni Arnold.

Type locality:—Pleistocene of San Pedro, Cal.

3010 Cerithiopsis truncata Dall.

Type locality:—Unalaska, in the canals of sponges.

3011 Cerithiopsis stephensæ

Type locality:—Bear bay, Peril Strait, Baranoff Island, Alaska (Mrs. Kate Stephens).—Puget Sound, Washington.

3012 C: Montereyensis. Monterey bay, Cal.

3013 C: ingens. Monterey, Cal.
3014 C: tumida. Monterey, Cal.

3015 Bittium Johnstonæ
Type locality:—Baja Cal. (Mrs. E. E. Johnston).
3016 Bittium purpureum
Based on Cerithiopsis purpurea Cpr.
Monterey, and Santa Barbara, Cal.—San Diego, Cal.
3017 Bittium vancouverense
Type locality:—Vancouver Island.
3018 B: attenuatum boreale
Vancouver Island.
3019 Variety multifilosum. San Pedro, Cal.
3020 Variety latifilosum. Terminal Island, Cal.

3021 Bittium (Semibittium) subplanatum
"Shell broadly elongate-conic, milk white. Nuclear whorls a little more than one, well rounded, smooth. The first of the post-nuclear whorls well rounded, marked by three spiral cords, one of which is at the summit, another at the middle of the whorl, while the third is a little above the suture. The succeeding turns show four spiral cords, of which the one at the summit is a little less strong than the rest; the remaining three divide the space between the sutures into four equal parts, beginning with the fourth whorl, intercalated cords make their appearance between the primary ones, so that on the last whorl we have an intercalated cord and sometimes two between all the primary cords; these, however, are never quite as strong as the principal ones. In addition to the spiral cords, the whorls are marked by decidedly curved, slender, well-rounded, almost vertical, axial ribs, which are scarcely indicated on the first turn, while 14 of them occur upon the second and third, 16 upon the fourth, 18 upon the fifth and sixth, 22 upon the seventh, 24 upon the eighth, and 26 upon the penultimate turn. The intersections of the spiral cords and axial ribs form weakly developed, rounded tubercles which are truncated on their posterior margin, while the spaces enclosed between them are very shallow quadrangular pits. Sutures strongly constricted. Periphery and base of the last whorl well rounded, marked by slender, spiral cords of which those immediately below the periphery are the strongest and are truncated on the posterior margin, sloping gently anteriorly. Of these cords, seven occur on the base of the type. Aperture rather large, irregularly oval, channeled anteriorly; posterior angle acute; outer lip thin, rendered sinuous by the external sculpture; columella decidedly oblique, strongly curved, and reflected."—Bartsch.
Type locality:—Catalina Island, Cal.

3022 Bittium (Semibittium) rugatum Cpr.
Lower Pleistocene, Santa Barbara, Cal.
3023 Bittium (Semibittium) Nicholsi
Type locality:—Gulf of California.
3024 Bittium (Semibittium) nitens Cpr.
Type locality:—Cape San Lucas, Baja Cal.

3025 Bittium (Lirobittium) interfossa Cpr.
Synonymy:—Rissoa interfossa Cpr.—Cerithiopsis fortior Cpr. —Rissoina interfossa Cpr.
Type locality:—Catalina Island, Cal.
"Shell rather large and robust, white, sometimes light brown. Nuclear whorls small, two; the first obliquely tilted, smooth; the

second with two strong spiral cords which divide the space between the sutures into three equal areas. Post-nuclear whorls appressed at the summit, strongly sloping shouldered, ornamented with two strong spiral keels, which divide the space between the sutures into three equal areas, and very strong, vertical, axial ribs, 16 of which occur upon each of the turns. The intersections of the axial ribs and the spiral cords form strong elongated tubercles, the long axes of which coincide with the spiral sculpture. These tubercles slope more abruptly posteriorly than anteriorly. The intersections of the axial ribs and the spiral cords inclose shallow squarish pits. Sutures weakly impressed. Periphery of the last whorl marked by a strong keel to which the axial ribs extend feebly. This keel is a little nearer to the first post-peripheral keel than that is to its posterior neighbor. Base moderately long, marked by two very strong keels, which divide the space between the peripheral keel and the tip of the columella into three equal areas, the spaces between the keels being very deep and a little wider than the keels. Entire surface of the spire and base, including the ribs and intercostal spaces, crossed by numerous, fine closely spaced, spiral striations. Aperture irregular, channeled anteriorly; posterior angle obtuse; outer lip thick within, thin at edge, rendered sinuous by the exernal sculpture; columella stout, strongly twisted and reflected; parietal wall glazed with a thick callus."—Bartsch.

3026 Bittium (Lirobittium) catalinense

"Shell elongate-conic, milk-white. Nuclear whorls a little more than one, marked by two strong spiral cords which divide the turns into three equal areas. Post-nuclear whorls shouldered at the summit, marked by three nodulose spiral keels; one of these, which is a little below the summit, is less strongly developed than the other two on all but the last turn; on this turn it is practically equal to the others. In addition to the spiral keels, the whorls are marked by rather strong, well-rounded axial ribs which are about two-thirds as wide as the spaces which separate them. Of these ribs, 16 occur upon the first to fifth, 18 upon the sixth and seventh, 20 upon the eighth, and 24 upon the penultimate turn. The intersections of the axial ribs and the spiral cords form strong cusp-like nodules, which are suddenly truncated posteriorly and slope gently to the succeeding cord anteriorly. The space between the summit and the truncated end of the first row of tubercles forms a strong shoulder. The spaces inclosed between the spiral keels and the axial ribs are moderately impressed rounded pits. Sutures strongly constricted, showing the greater part of the peripheral cord on all the turns. Periphery and base of the last whorl marked by five spiral cords which grow successively weaker from the periphery to the umbilical area. These cords are truncated on the posterior margin and slope gently anteriorly until they fuse with the general surface of the shell. Aperture irregular, channeled anteriorly; posterior angle obtuse; outer lip rendered sinuous by the external sculpture; columella oblique, somewhat twisted; parietal wall glazed with a thin callus."—Bartsch.

Type locality:—Pleistocene, Santa Barbara, Cal.

3027 Variety inornatum

Type locality:—Catalina Island, Cal., in 40 fms.

3028 Bittium (Lirobittium) ornatissimum

Shell elongate-conic, creamy-white. Nuclear whorls one and

one-half, marked by two slender threads which divide the space between the sutures into three equal parts. Post-nuclear whorls strongly shouldered at the summit, marked by three strong spiral keels which divide the space between the sutures into four almost equal parts. The space between the first of these keels below the summit and the summit is a little narrower than the rest. In addition to these three strong spiral keels, intercalated keels are present, the first of which is at the summit, while another occurs between each of the other keels. On the last whorl these attain a strength almost equal to that of the primary keels. In addition to this spiral sculpture, the whorls are marked by well-developed, slightly retractive, axial ribs, of which 14 occur upon the first and second, 15 upon the third, 16 upon the fourth, 18 upon the fifth and sixth, 20 upon the seventh, 22 upon the eighth, 28 upon the ninth and tenth, and 34 upon the penultimate turn. The intersections of the axial ribs and the spiral keels form strong cusps which are suddenly truncated posteriorly and slope gently anteriorly the spaces inclosed between them being small, rounded pits. Sutures channeled. Periphery of the last whorl marked by a slender cord. Base moderately prolonged, ornamented by six spiral cords, of which the two immediately anterior to the periphery and the two at the base of the columella are decidedly stronger than the rest. Aperture rather large, channeled anteriorly; columella stout, twisted, somewhat revolute, and reflected; parietal wall glazed with a moderately thick callus."—Bartsch.

Type locality:—Deadmans Island, California.

3029 Bittium asperum Gabb.

Type locality:—Lower Pleistocene, Santa Barbara, Cal.

3030 Variety **Lomaense**

Type locality:—off Point Loma, Cal.

3031 Bittium cerralvoense

Type locality:—off Cerralvo Island, Gulf of Cal.

3032 Bittium (Semibittium) **Larum**

"Shell very regularly elongate-conic, light brown. Nuclear whorls at least two, worn. Post-nuclear whorls appressed at the summit, decidedly overhanging. The early post nuclear whorls are marked by four equal and equally spaced spiral cords, the first of which is at the summit; these cords divide the space between the sutures into four equal parts. On the sixth whorl intercalated spiral cords make their appearance in the middle, between all the primary cords; these attain a little more than half the strength of the primary cords on the last turn. In addition to the spiral sculpture, the whorls are marked by moderately strong, almost vertical, axial ribs, of which 14 occur upon all but the penultimate turn, which has 18. The intersections of the axial ribs and spiral cords form elongate tubercles, which have their long axis parallel with the spiral sculpture. The spaces inclosed between the axial ribs and the spiral cords are rectangular pits on the early whorls and broad, incised lines on the later ones. Sutures slightly constricted. Periphery of the last whorl angulated, marked by a spiral cord. Base short, slightly concave in the middle, marked by six spiral cords which grow successively from the periphery to the umbilical region. In addition to the above sculpture, the entire surface of spire and base is marked by fine lines of growth and exceedingly fine, spiral striations. Aperture quadrangular, channeled anteriorly; posterior angle obtuse; outer lip thin, showing the external sculpture within, rendered sinuous at the edge by the external sculpture; columella moderately strong,

twisted, and reflected; parietal wall glazed with a thin callus."—Bartsch.

Type locality:—San Pedro, Cal.

3033 Bittium Oldroydæ

"Shell very large, chestnut brown. (Nuclear whorls decollated in all our specimens.) Post-nuclear whorls moderately rounded, ornamented with three spiral keels, which are truncated on their posterior margin and slope gently anteriorly until they fuse with the general mass of the shell. These keels divide the space between the sutures into four almost equal parts, the space between the summit and the first keel being a little narrower than the rest. In addition to the spiral keels, the whorls are marked by slightly retractive axial ribs, of which 12 occur upon the second, 14 upon the third and fourth, 16 upon the fifth to seventh, 18 upon the eighth, 20 upon the ninth and tenth, and 22 upon the penultimate turn. These ribs extend from the summit to the suture. Their intersections with the spiral cords form strong, cusped nodules, which slope more abruptly anteriorly than posteriorly. The spaces inclosed between the spiral keels and the axial ribs are considerably wider than the ribs or cords and form squarish pits. Sutures strongly marked, showing a slender, smooth, peripheral cord (to which the axial ribs extend,) on almost all the turns. Periphery and base of the last whorl well rounded, marked by six well-rounded spiral cords, which grow successively weaker, and a litle more closely spaced from the periphery to the umbilicus. Entire surface of spire and base crossed by numerous slender axial lines of growth. Aperture moderately large, channeled anteriorly; posterior angle obtuse; outer lip rendered sinuous by the external sculpture; columella stout, flexuose, and reflected; parietal wall covered with a thick callus."—Bartsch.

Type locality:—Lower California.

3034 Bittium fetellum

Type locality:—Catalina Island, Cal., in 16 fms.

3035 Bittium giganteum

Type locality:—San Diego, Cal., post-Pliocene.

3036 Bittium casmaliense

Type locality:—Santa Barbara Co., Cal., Lower Pliocene.

3037 Bittium Arnoldi

Type locality same as last.

3038 Bittium mexicanum

Type locality:—Gulf of Cal.

3039 Cerithiopsis (Cerithiopsis) tuberculoides Cpr. Mazatlan.

3039A Variety **Albonodosa** Carpenter. Mazatlan.

3040 Cooper, J. G.:

On the natural history of the Farallon Islands. Zoe 3:151:—Mollusca. Enumerates the following species.

276 Martesia intercalata Cpr
360 Entodesma saxicola Baird
1038 Psephis tellimyalis Carpenter.
484 Rupellaria lamellifera See 2186.
413 Chama pellucida Broderip.
126 Mytilus Californianus
128 Septifer bifurcatus

460 Modiola modiolus Linne.
665 Axinæa subobsoleta Carpenter.
330 Hinnites giganteus Gray
331 Placunanomia macroschisma Desh
262 Tornatella punctocælata Cpr
761 Crytochiton stelleri Middendorf.
1280 Mopalia ciliata Sowerby.
3041 Mopalia vespertina Gould.
1279 Nuttalina scabra Reeve.
2892 Ischnochiton magdalenensis Hinds.
3042 Leptochiton internexus Carp.
1537 Acmæa testudinalis patina Esch.
616 Acmæa pelta Eschscholtz.
3043 A: pelta var. asmi Midd.
3044 A: pelta var. pintadina Gould.
245 Acmæa scabra Nutt. See 2396.
241 Acmæa persona Esch.
91 Acmæa spectrum
239 Acmæa mitra Esch
92 Lottia gigantea
3045 Lepeta cæcoides Carp.
272 Gadinia reticulata Sby
87 Fissurella volcano
1542 Glyphis aspera Esch.
3045a Clypidella bimaculata Dall.
84 Haliotis cracherodii Leach
833 Haliotis kamtschatkana Jonas.
834 Haliotis rufescens Swainson.
233 Haliotis assimilis Dall
490 Phasianella compta pulloides Carpenter.
3046 Leptothyra carpenteriana Pilsbry.
221 Chlorostoma funebrale A Ad
223 Chlorostoma brunnea Phil
732 Chlorostoma montereyi Kiener.
228 Calliostoma costatum Mart
905 Margarita pupilla Gould.
904 Margarita lirulata Carpenter.
186 Crepidula navicelloides Nutt
426 Bittium filosum Gould.
209 Bittium armillatum Cpr
435 Hipponyx antiquatus Linne.
180 Trivia californica Gray
77 Litorina planaxis
76 Litorina scutulata
429 Lacuna solidula Loven.
204 Lacuna unifasciata Cpr
214 Barleeia haliotiphila Cpr
162 Erato vitellina Hds
67 Conus californicus
196 Odostomia inflata Cpr
475 Cerithiopsis tuberculata Mont.
161 Mitra maura Swains
414 Amphissa corrugata Reeve.
1234 Purpura crispata Chemnitz.
479 Purpura canaliculata Duclos.
408 Ocinebra lurida Middendorf.
146 Ocinebra interfossa Cpr.
975 Pedicularia californica Newcomb.
3047 Fusus luteopictus Dall.

3048 Hemphill, Henry:
Notes on the animals of some West Coast shells. Zoe 3:350. Gives the following descriptions (numbers 3049-3051).

3049 Trivia solandri Gray.
"A single living specimen of this beautiful little mollusk recently collected by Miss Ida M. Shepard, at Ballast Point, San Diego Bay, and which she kindly brought to me for examination, enabled me to make the following note on the animal.
"When the animal is fully extended, the mantle lobes completely envolop the shell. The lobes are of a brownish flesh-color, thickly though not closely crowded with mammillated tubercles, about thirty-five on each side, flecked and frosted with whitish specks. The tubercles vary some in size and form, the larger ones being rounded and broad at the base, while the smaller ones are narrower and more conical. The nipple-like processes that rise from their summits vary in number from 1 to 4 on each tubercle, their tips being also frosted with whitish specks. The spaces between the tubercles are a shade darker than other portions of the mantle, and peppered over with irregular black specks. The edges of the mantle lobes that meet on the summit of the shell are lighter in color than other portions of the mantle, and are also covered with black specks like those between the tubercles.
"When the animal is in motion the proboscis extends forward like the bowsprit of a boat; it is about ½ an inch long, a shade or two lighter than the mantles, flecked with whitish specks like those on the tubercles, with its end slightly expanded and edged with white. Two slender tentacles about 5-16 of an inch long when fully extended protrude from the head near the base of the proboscis, each one bearing a black piercing eye, about midway between their tips and the head of the animal.
"The foot is about as broad as the shell, truncated in front and roundly pointed behind, when the animal is in motion. The front of the foot is marked beneath by a very fine transverse dark line, which perhaps serves to define the front edge of the sole. The sole is lighter colored than other portions of the animal that are exposed outside of the shell, and is beautifully and profusely flecked with very small whitish dots.
"The animal was slow in its movements, its motion being a continuous glide around the vessel in which it was confined, but most of the time it remained stationary at the edge of the water, as if waiting for the tide to come in, or a chance to escape."

3050 Conus californicus Hinds.
"The body of this mollusk is whitish in color, and profusely dotted over with black specks that frequently coalesce near the margin of the mantle. When the animal is in motion the foot extends about ¼ of an inch beyond the anterior and posterior ends of the shell. It is truncated in front and bluntly pointed behind. The sole is white and sparsely sprinkled with black specks. The motion of the animal is a constant glide. The proboscis is black, and about ½ an inch long when fully extended, and seems to be a specialized portion of the animal's mantle, rolled together with the lower edges in contact but not joined. It curves over and above the back of the shell, as the animal moves forward. Two small tentacles, of a dark color, each 5 mm. long, protrude from the head near the base of the proboscis, bearing two small keen eyes, which are situated about half way between the tips and base of the tentacles.
The operculum is horn-color and claw-shaped, a portion of the

lower or sharp end being free from the animal.

When the animal is in motion this operculum lies transversely across the upper side of the posterior part of the animal's foot.

The nucleus of the young shell is white and glassy, and after a few turns the spire resembles a bluntly pointed, round peg. After this, the upper end of the whorls rapidly enlarges, as also does the length of the whorls from the anterior end of the shell to the shoulder.

In the adult the body of the shell is covered with numerous revolving lines, more prominent near the anterior end of the shell.

On the spire of some specimens there are also strong revolving lines, while on others these lines are entirely obsolete. The shoulder of the last whorl is rather concave and forms a shallow subcanal around the shell at the base of the spine, but this, like all other characters of shells, is very variable, and in some individuals it is absent.

The whole shell is covered with a dirty yellowish epidermis that frequently darkens into chestnut color. The shells are quite brittle and very frequently broken, which perhaps is due to the thin, sharp outer lip, and an excessive amount of carbonate of lime in their composition. The bungling manner in which the animal repairs these fractures does not add to the beauty or attractiveness of the shell, which even in its perfect state is not very inspiring, especially when we consider the beauty of many other cones.

3051 Terebra simplex Cpr.

The animal that inhabits this shell is of a pure, pearly white color, without spot or blemish. When fully extended, its foot is about 1-3 the length of the shell. The proboscis is slender, about as long as the foot of the animal, gracefully curved over the back of the shell, and when the animal is in motion it forms an interesting and conspicuous part of the creature, and seems out of all proportions in its length to the rest of the animal's body. This animal has no tentacles, but the eyes are situated on mammillated tubercles that protrude from the body midway between the foot and proboscis. The eyes are small, dark and keen; the foot is truncated in front and rounded behind. The operculum is carneous, unguiculated in form, and lies on the upper side of the posterior part of the foot. This shell is abundant at San Diego and southward."

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3052 Hemphill, Henry:

A new species of Bulimulus. Zoe 4:395. Describes the following.

3053 Eulimella occidentalis

"Shell small, turriculated, white, shining, transparent, consisting of about nine rather flattish convex whorls, with a single fine, revolving threadlike liræ above the periphery, and with very fine microscopic revolving striæ beneath, observable only with a good glass and light; suture deep; aperture subquadrate; lip simple, acute; columella straight. Length 4, breadth 1 mm."

Type locality:—mudflats between tides, San Diego, Cal.

The above title is rather unfortunate, as it does not describe a new Bulimulus, and Dr. Dall says the shell proves not to belong to the Pyramidellid family, but a species of Albina (see U. S. nat mus pr 39:410).

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3054 Varieties

This word is used by some writers to indicate a subspecies, by others only a slight inconstant variation or form. Where used in the first sense many authors believe in raising the "variety" to full specific rank; and many customs exist. In the compilation of the present work nearly all subspecies or forms are alike treated as "varieties" except in some few cases authors using the word "form" are quoted with exactness. It is an open question whether inconstant forms—such as color variations, should receive names. The various essays by Henry Hemphill, one of the most indefatigable of collectors, and a close student of nature, throw much light on the subject of variation, but they are suggestive rather than conclusive, and thousands of further observations are necessary before final opinions may be formed.

3055 Berry, S. Stillman:

The Cephalopoda of the Hawaiian Islands. U. S. Bureau of Fisheries bulletin 32:257-362 t 45-55. 1914.

3056 Hemphill, Henry:

Note on a California Loligo. Zoe 3:51.

Names provisionally a species found in the Oakland and San Francisco markets as Loligo Stearnsii, but this must be considered as a nomen nudum. Mentions the following as all the cephalopods known to the Pacific coast from Alaska to San Diego.

409 Argonauta argo Linne.
139 Octopus punctatus Gabb
3057 Ammostrephes Ayresii Gabb.
3058 Ammostrephes giganteus Gabb.

The above is apparently an error—Ommastrephes being meant.

1283 Onychoteuthis fusiformis Gabb. Puget Sound? (Kennerley). Victoria?
879 Loligo stearnsii Hemphill.

Perhaps Loligo Gahi D'Orb.

3059 Berry, S. S.:

On a Cephalopod new to California with a note on another species. Laguna marine laboratory, first report 83-87 f 44-48.

Notes on the following two species.

3060 Onychoteuthis Banksii (Leach 1817) Ferussac.

Records this widespread oceanic species from off the entrance to Newport Bay, Cal.

3061 Polypus bimaculatus

The common shore "Octopus" of Southern California.

3062 Berry, S. E.:

Notes on some Cephalopods in the collection of the Univ. of Cal. Univ Cal pub zool 8:301-310, t 20-21.

Notes on the following forms.

3063 Octopus bimaculatus Verrill.

As Polypus bimaculatus.

3064 Polypus Hongkongensis

Octopus punctatus Gabb (non Blainville). Mentions the young of apparently another species.

3065 Dosidicus gigas
Ommastrephes gigas d'Orbigny.

3066 Dall, William Healey:
Diagnoses of new shells from the Pacific Ocean. U. S. nat mus pr 45:587-597. Describes Nos. 3067-3082, and others from outside our province.

3067 Chrysodomus eulimatus
Aniwa bay, Sakhalin Island.
3068 Tritonifusus Jordani
Bering Sea to Puget Sound. Named in Honor of Dr. David Starr Jordan.
3069 Amphissa palmeri. Gulf of Cal.
3070 Amphissa parvula. Off La Paz, Baja Cal.
3071 Liotia lurida
Type locality:—San Josef Island, Gulf of Cal.

3072 Margarites simblus
"Shell pale gray, beehive-shaped, with a blunt apex and 5½ rapidly enlarging convex whorls; nucleus minute; subsequent whorls polished, finely spirally striate, crossed by very fine flexuous striæ corresponding to the lines of growth, which more or less microscopically crenulate the interspaces between the spirals; suture not impressed; base with an obscure angulation peripherally, the sculpture similar to the rest of the shell but more pronounced; umbilicus narrow, deep; aperture subquadrate, oblique; the pillar thin, white; the throat pearly. Height of shell 13; of last whorl 10; maximum diam. of base 14 mm."
Type locality:—off Santa Barbara Channel, Cal., in deep water.

3073 Pecten (Pseudamusium) Arces
"Shell hyaline white, with no anteriorly or convex hinge, line rather long, ligament and pit very small, entire surface of convex valve sculptured with subequal radial threads and similar concentric threads, forming nearly square equal reticulations, about four to a square millimeter; the intersections are slightly prominent on the disk and more or less minutely spinose on the ends of the valve; beside these the entire valve is sculptured with minute equal radial lines, about six to a reticulation; the interior of the valve is glassy, the sculpture showing through. The flatter valve has similar sculpture, with a narrow smooth submargin, a ctenolium of five or six free teeth, a moderately deep byssal notch and five imbricated rays on the ear above the fasciole of the notch. Height, 35; length, 34.5; diameter, 6.0 mm."
Type locality:—Off Santa Barbara, Calif.

3074 Cuspidaria subglacialis
"Shell large for the genus, chalky, with a coarse dehiscent olivaceous periostracum; equivalve, nearly equilateral. Beaks nearly in the center of the shell, anterior dorsal margin arcuately descending, anterior end of shell ovately rounded; posterior slope straight, or slightly distally recurved, with a short compressed distally gaping rostrum, terminally subtruncate; base arcuate, somewhat patulous below and behind the beaks, incurved at the beginning of the rostrum; hinge in the left valve with a small obliquely backwardly directed chondrophore; in the right valve there is also a strong lamina parallel with the dorsal margin and separated from it by a groove which receives the edge of the oppo-

site valve in closing; beaks opisthocœlous, inconspicuous. Height, 24; length, 39; diameter, 20 mm."

Type locality:—off the Californian coast in deep water.

3075 Psephidia cymata

"Shell small, white, solid, rounded triangular, with inconspicuous, somewhat anterior beaks, the lunule and escutcheon very feebly indicated; surface with fine concentric but not perfectly regular low threadlike sculpture; periostracum yellowish, rather coarse; hinge of the genus, inner margins smooth, interior disk polished, the pallial sinus small, ascending, the inner extreme bluntly rounded; muscular impressions distinct, ligament small and weak. Height, 5.5; length 6.0; diameter 2.5 mm."

Type locality:—near Cerros Island, Lower Cal., in shallow water.

3076 Lyonsia (Allogramma) Amabilis

"Shell thin, with a pale olivaceous periostracum and pearly interior, the lithodesma small. The sculpture resembles closely that of the type of the group, L. (A.) formosa Jeffreys, from the Canaries, but differs in the following details; the anterior transverse ripples, the central nodulous ray, the radial ridge below the posterior dorsal area are more vertically directed; on the latter area there is only faint indication of the radial ribbing which in L. formosa is distinct and minutely spinose; the anterior end is longer than the posterior, while in formosa the reverse is the case; the coloration of the periostracum is olivaceous green while in formosa it is ferruginous brown. Length 23; of anterior end 12; height 15; diameter 12 mm."

Type locality:—Santa Barbara Channel, Calif., in deep water.

3077 Lyonsia pugetensis

"Shell large, thin, pearly under a thin olivaceous gray periostracum which is covered with fine radial lines to which fine sand adheres strongly, so that an attempt to remove the sand also destroys the greater part of the periostracum; the shell is slightly inequivalve and very inequilateral, the anterior end being much shorter; the periostracum projects over the shelly margin; the anterior end is evenly rounded, the posterior rostrate, the beaks not conspicuous; the base is convexly arcuate in the middle but is rapidly attenuated toward the rostrum, which is terminally truncated; interior pearly, pallial area relatively small within the somewhat irregular unsinuated pallial line; hinge edentulous with a small narrow lithodesma. Length of shell 36; of anterior portion 15; height at beaks 17; maximum diameter 10 mm."

Type locality:—coast of Washington.

3078 Poromya (Dermatomya) Tenuiconcha

"Shell small, thin, olivaceous, the pearly luster showing through the periostracum; equivalve, inequilateral, anterior end shorter, rounded in front; posterior end longer, roundly truncate; beaks prominent, prosocœlous, with a marked but uncircumscribed depression in the lunular region in front of them; interior pearly, brilliant; margins simple, sharp; hinge in the left valve with a small internal resilium seated on an inconspicuous oblique chondrophore, with a notch immediately in front of it, into which fits a projecting denticle on the corresponding part of the opposite valve. Height, 13; length of shell, 16; of anterior portion, 6; diameter, 10 mm."

Type locality:—Off Monterey Bay, California, in deep water.

3079 **Erycina colpoica.** Bulf of Cal.
3080 **Rochefortia compressa.** Gulf of Cal.
3081 **Aligena nucea.** Gulf of Cal.
3082 **Vesicomya suavis.** Gulf of Cal.

3083 **Stearns, R. E. C.:**
Notes on Cytherea (Tivela) crassatelloides Conrad, with descriptions of many varieties. U. S. natl mus pr 21:371-377, t 23-25.
Describes the following forms.

3084 Variety **Pauciradiata**
3085 Variety **Multiradiata**
3086 Variety **Alternata**
3087 Variety **Eccentrica**
3088 Variety **Serialis**
3089 Variety **interrupta**
3090 Variety **Luteobrunnea**
3091 Variety **Uniradiata**
3092 Variety **Biradiata**
3093 Variety **Triradiata**
3094 Variety **ochracea**
3095 Variety **Purpureo-chocolata**
3096 Variety **Biseralialis**
3097 Variety **Triserialis**
3098 Variety **Aurora**
3099 Variety **Duplicata**

3100 **Amphithalamus tenuis**
"Shell elongate-ovate, dark greenish horn-color, with the columella and the aperture yellowish white, excepting the dark edge of the peristome. Nuclear whorls 1½, well rounded, marked by about 15 slender, equal and equally spaced, spiral threads and numerous, very fine, axial threads, lending the surface a very minutely-pitted appearance. Post-nuclear whorls very narrowly subtabulatedly shouldered at the summit, well rounded, smooth excepting fine, incremental lines. Suture moderately impressed. Periphery of last whorl well rounded. Base long, well rounded, bearing a low, broad, spiral cord on its middle, which bounds the posterior termination of the white area. Aperture oval, very oblique; peristome double, the inner fusing with the anterior portion of the outer lip, while posteriorly it is distinct and at a considerable distance from the columella and the parietal wall; the space between the columella, parietal wall and the inner peristome is bridged over by a concave band of shelly matter."—Bartsch, U. S. natl mus pr 41:264, f 3.
Type locality:—La Jolla, Cal., on seamoss (F. W. Kelsey).
Monterey, Cal. AA. lacunatus and inclusus are described in the same paper as above, with figures.

3101 **Hanna, G. Dallas:**
The American species of Sphyradium with an inquiry as to their generic relationships. U. S. natl mus pr 41:371-376, with figures.

3102 Genus **Sphyradium** Charpentier.
3103 **S: Hasta.** Pleistocene, Kansas.
3104 **S: alticolum.** Utah, Colo., and Wyoming.
Synonymy:—Pupa and Pupilla alticola Ingersoll.
3105 **S: Edentulum.** Europe, Asia, etc.

Synonymy:—Pupa edentula Drap. Pupa and Vertigo simplex Gld.

3106 Eumeta intercalaris
Gulf of Cal.
3107 Eumeta bimarginata C. B. Adams.
Off La Paz, Baja Cal.—Panama.
Bartsch, U. S. natl mus pr 39:565-568, with figures.
3108 Alaba supralirata Cpr. Gulf of Cal.
3109 Alaba Jeannettæ
San Diego, Cal., to Gulf of Cal.
Named in memory of Miss Jean O'Connor, who contributed specimens to the U. S. natl mus (see pr 39:155, f 3.).
3110 Bartsch, Paul:
The recent and fossil mollusks of the genus Diastoma from the West Coast of America. U. S. natl mus pr 39:581.
The following species are described.
3111 Diastoma fastigiata
Based on Bittium fastigiatum Cpr.
Type locality:—Lower Pleistocene beds, Santa Barbara, Cal (Jewett).
3112 D: Chrysalloidea. Gulf of Cal.
3113 D: Oldroydæ. San Pedro, Cal.
3114 D: Stearnsi. San Diego, Cal.
3115 Dall, William Healey:
Synopsis of the Lucinacea and of the American species. U. S. natl mus pr 23:779-833, t 39-42. West American species mentioned are the following (3116-3133).
3116 Phacoides (Here) **Richthofeni Gabb, 1866.**
Catalina Island to Gulf of Cal.
3117 Phacoides (Cavilucina) Lamprus Dall, 1901. Gulf of Cal.
3118 Phacoides (Cavilucina) lingualis Cpr. 1864.
Monterey, Cal. (Gabb?). Gulf of Cal. to Acapulco, Mexico.
3119 Phacoides (Cavilucina) prolongatus Cpr. 1857.
Cape San Lucas, Baja California.
3120 Phacoides (Pleurolucina) undatus Cpr. 1865.
Gulf of Cal. Lucina undata Cpr. (non Lam.).
3121 Phacoides (Lucinisca) fenestratus Hinds, 1844.
Baja Cal. to Panama, Peru?
3122 Phacoides (Lucinisca) Nuttallii Conr. 1837.
Santa Barbara, Cal., to Gulf of Cal.
Synonymy:—Lucina Nuttallii Conr.
3123 Phacoides (Miltha) Childreni Gray, 1825.
Gulf of Cal., to Mazatlan.
3124 Phacoides (Pseudomiltha) tellinoides Reeve, 1850.
Magdalena bay, Baja Cal., to Guayaquil, in 11 fms.
3125 Phacoides (Lucinoma)) heroicus Dall, 1901.
Sitka, Alaska, to San Pedro, Cal., in 8-135 fms.
Gulf of Cal. in 1,005 fms.
3126 Phacoides (Lucinoma) **annulatus** Reeve, 1850.
Synonymy:—Lucina borealis Cp.—L: filosa Dall.—L: acutilineata Gabb.
3127 Phacoides (Lucinoma) æquizonatus Stearns, 1890.
Santa Barbara channel, Cal., in 276 fms.
3128 Phacoides (Epilucina Californicus
Synonymy:—Lucina Californica Conrad, 1837.—L: artemidis Cpr. (young).
Crescent City to San Diego, Cal.
3129 Phacoides (Parvilucina) tenuicsulptus Cpr. 1865.
Bering Sea to Catalina Island, Cal. in 8-135 fms.

3130 Phacoides (Parvilucina) approximatus Dall, 1901.
Catalina Island, Cal., to Panama.
3131 Phacoides (Bellucina) cancellaris Philippi, 1846.
Cerros Island, Baja Cal., to Panama.
3132 Divaricella eburnea Reeve, 1850.
Cape San Lucas, Baja Cal., to Panama.
3133 D: Perparvula Dall, 1901. Cape San Lucas, south.

3134 Cooper, J. G.:
Catalogue of the land and fresh-water mollusca of Lower California. Zoe 3:12-25. Enumerates 45 species, as follows.

675 Binneya notabilis Cooper.
2111 Bulimulus pallidior Sby.
2116 B: (Leptobyrsus) artemesia W. G. Binney.
2114 B: (Drymæus) californicus Reeve.
2118 B: (Leptobyrsus) excelsus Gould.
3135 Bulimulus Gabbi
Type locality:—"Lower California." Cooper considers this a synonym of B: Xantusi in a later paper.
2117 B: (Leptobyrsus) inscendens W. G. Binney.
3136 Bulimulus inscendens Bryanti
San Jose del Cabo, Baja Cal., to La Paz.
3137 Bulimulus proteus
Peru. Chili. Cape San Lucas (Xantus).
2115 B: (Mesembrinus) Xantusi W. G. Binney.
2119 B: (Leptobyrsus) spirifer Gabb.
2122 B: (Orthotomium) sufflatus Gould.
2123 B: (Orthotomium?) pilula W. G. Binney.
3138 Cylindrella irregulare Gabb, 1867.
3139 Cylindrella Taylori Pfeiffer, 1861.
Synonymy:—Cylindrella Newcombiana Gabb, 1867.
3140 Helix areolata
3141 Helix veatchii Newcomb.
3142 Helix levis
3143 Helix pandoræ
3144 Helix Duranti (var Caelata Mazyck)).
3145 Helix Kellettii
3146 Helix Newberryana
3147 Helix Damascenus Gould, 1856.
"Desert east of California." (Frick). A var. of pandoræ fide Cp.
3148 Helix Rowellii
Arizona (Frick); near Phoenix (Pilsbry). Cooper, in the above cited paper treats H: Lohrli Gabb, from Muleje, Baja Cal., as a var. and Yates' Carpenteri var. indioensis as a synonym.
3149 Helix facta
3150 Helix Stearnsiana
3151 Helix Traskii
3152 Helix Traskii Carpenteri
Cooper says H: Remondii Gabb (non Tryon, 1863), scarcely differs from Carpenteri.
3153 Helix tudiculata
3154 Helix (Vancouverensis Lea, 1839) var. **Sportella**
This is Hemphill's transfuga, as far as the Baja Cal. shells go.
3155 Limnophysa humilis
3156 Physa elata Gould.
3157 Physa aurantia Carpenter.
Cooper says these two are doubtless only from Mazatlan, instead of from Baja Cal., as recorded.
989 Physa Gabbii Tryon.

988 Physa diaphana Tryon.
3158 Pupa chordata Pfeiffer, 1856.
Type locality:—Sinaloa, Mexico. The Baja Cal. locality is based on Pupa Sterkiana—first determined as this species.
3159 Pupa Orcutti
Pilsbry, ms., later published as Pupa Californica var. diegoensis by Sterki.
3160 Pupa ovata (see Vertigo).
1836 Pupa calamitosa
1494 Pupa Hemphilli Sterki.
3161 Rhodea Californica Pfeiffer, 1846.
Monterey, Cal. (certainly an error). Bogota, New Granada (T. Bland).
3162 Variety **Ramentosa** Cp. 1891.
Cooper later called this Columna ramentosa.
San Jose del Cabo, Baja Cal., in a cave in the mountains.
3163 Veronicella olivacea Stearns, 1871.
Type locality:—Nicaragua, west slope (McNeil). Baja Cal. (Hemphill). Hemphill denied finding this species in Baja Cal. according to a later paper by Cooper. Lobitos creek, Cal. (Stearns).
1083 Succinea oregonensis Lea.
97 Melampus olivaceus
957 Onchidella carpenteri W. G. Binney.
271 Pedipes liratus Binney
98 Pedipes unisulcatus
3164 Siphonaria æquilirata Cpr., 1867.
Margarita Island, Baja Cal., to South America.
3165 Siphonaria lecanium Philippi, 1846.
Cape San Lucas, Baja Cal., to Acapulco, Mexico.
3166 Neritina Californica Reeve, 1845.
Gulf of California.
3167 Neritina cassiculum Sowerby, 1832.
San Miguel, Baja Cal. Mazatlan.
3168 Neritina picta Sowerby, 1832.
Guaymas, Sonora, to Panama. Magdalena Bay, Baja Cal., "in brooks near the sea." This is a marine species as far as observed by the writer.
3169 Anodonta Californiensis
British Columbia to Arizona. Colorado river.
3170 Helisoma Ammon
Klamath Lake, Oregon, to Colorado river (Cooper).
3171 Planorbis Gracilentus Gould, 1855.
Colorado Desert, Cal. If identical with P: Liebmanni, this has a wide distribution, from Texas to Vera Cruz, and on the West Coast from the above locality to Manzanillo (Orcutt).
3172 Tryonia Exigua Conrad, 1855.
Utah. Dos Palmas Springs, Colorado Desert (Orcutt).
1975 Tryonia clathrata Stimpson
991 Physa heterostropha Say. **34**
992 Physa humerosa Gld.
1646 Gnathodon (Rangianella) mendicus Gld. 1851.
628 Amnicola longinqua Gld.

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